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ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 154

DATE: Monday, June 1, 1992

BEFORE:

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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ENVIRONMENTAL ASSESSMENT BOARD
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,
R.S.O. 1980, c. 140, as amended, and Regulations
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro
consisting of a program in respect of activities
associated with meeting future electricity
requirements in Ontario.

Held on the 5th Floor, 2200
Yonge Street, Toronto, Ontario,
Monday, the 1st day of June,
1992, commencing at 10:00 a.m.


VOLUME 154

B E F O R E :

THE HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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1 ---Upon commencing at 10:00 a.m.

2 THE REGISTRAR: Please come to order.
3 This hearing is now in session. Be seated, please.

4 THE CHAIRMAN: I want to put on the
5 record Exhibit 692 filed by Ontario Hydro entitled:
6 Development of the 1992 Update, dated May 28th, 1992.

7 The document is in response to the
8 direction by the Board made on Monday, May the 25th.
9 last.

10 ---EXHIBIT NO. 692: Ontario Hydro document entitled:
11 Development of the 1992 Update, dated May
28th, 1992.

12 THE CHAIRMAN: Mr. Heintzman.

13 MR. HEINTZMAN: Mr. Chairman, I would
14 note that this week is Environment Week in Canada, a
15 good subject to start off on.

16 AMIR SHALABY,
17 JOHN KENNETH SNELSON,
18 JANE BERNICE TENNYSON,
19 FREDERICK GEORGE LONG,
BRIAN PAUL WILLIAM DALZIEL,
HELEN ANNE HOWES; Resumed.

20 CROSS-EXAMINATION BY MR. HEINTZMAN (Cont'd):

21 Q. Mr. Snelson and Mr. Shalaby, I guess
22 my questions will be again primarily to you this
23 morning.

24 And I would like to just discuss for a
25 moment, hopefully not repetitive to what Mr. Mark or

1 Mr. Rodger asked you, about the concept of planning, as
2 you say, around the median as reflected in the Update.

3 Would I be correct that insofar as all of
4 the documentation referring to future generation
5 capacity that none of the documentation refers to
6 anything other than the median itself?

7 MR. SHALABY: A. No, I think Mr. Dalziel
8 explained how plans to meet the upper are put together
9 and how plans to meet the lower are put together.

10 Q. In the Update, there's nothing in the
11 Update about meeting the upper or the lower, as I
12 understand it.

13 A. If he refers specifically to Exhibit
14 452, then you are correct in my recollection, yes.

15 Q. And any of the runs to show the upper
16 or the lower were prepared after the Board approved
17 Exhibit 452 and after it was released to the public?

18 A. That is correct.

19 Q. So that when we are talking about
20 planning around the median, insofar as any new
21 generating capacity is concerned, the only thing you
22 show is the median itself?

23 A. And the response portfolio and
24 capabilities of the response portfolio.

25 Q. Yes, yes.

1 A. And they go hand in hand. The
2 concept is: Here is how we could meet the median and
3 here are response measures to either go down from there
4 or go up from there.

5 Q. Well, I don't want to get into the
6 response mechanisms, I want to more concentrate on what
7 we mean in terms of any planning philosophy or practice
8 by the words around the median. Now, is there
9 anything --

10 A. The reason I keep bringing up the
11 response portfolio is that it is an integral part, it
12 is part and parcel of the words planning around the
13 median or what I described in my direct testimony as
14 managing uncertainty.

15 So all I'm saying is, they are not
16 separate issues, they are one in the same or parts of
17 the same issue.

18 Q. But you are not asking for any
19 approvals from this Board for any of that response
20 portfolio?

21 A. No, we are not.

22 Q. Now, is there anywhere that I can get
23 a grip on how far up around the median goes? There's
24 nothing in the Update that tells us how far from the
25 median around the median is, I take it?

1 A. Not numerically, if that is what you
2 are looking for. But, again, Mr. Dalziel in his
3 presentations and in the various charts that we saw in
4 direct testimony, we showed the percentage of load that
5 can be met from existing facilities.

6 Q. Well, you certainly showed meeting
7 load from existing facilities, but am I correct that
8 there's nothing that tells us how far around the median
9 is away from the median; is that correct?

10 A. My answer is that numerically we
11 don't have a number, but when we look at the response
12 portfolio and find, for example, that the Hearn and
13 Keith stations have so many megawatts and the
14 combustion turbines that can be added on existing sites
15 are so many megawatts, that is an indication of how far
16 above the median, for example, we can go. So there are
17 megawatt numbers that can indicate -- there is also an
18 indication of how many more NUGs can be obtained.

19 So in terms of percentage above the
20 median, I say that probably there aren't numerical
21 numbers in the Update, but there are megawatt figures
22 that give a sense of how far above the median one can
23 go with the response portfolio.

24 Q. Well, those are all supply side
25 responses. What I'm trying to get at is, from the

1 demand side influence, you have got basic demand and
2 you are taking off things like life extensions and you
3 are taking off demand management and you are taking off
4 NUGs, et cetera, to try to arrive at your future demand
5 needs, the primary load basis.

6 I haven't seen anything that tells us how
7 far away from the median you can get in planning around
8 the median. Is that a fair statement?

9 A. No, it isn't a fair statement. If
10 you want to put it in black and white, no, it isn't. I
11 refer, for example, to page 14 of Exhibit 452.

12 Q. Yes. Well, that shows the upper, the
13 median and the lower. So is that what you are telling
14 me, that the band of planning around the median is the
15 upper, the median and the lower forecast?

16 A. It shows something else in addition
17 to the upper, median and lower, it shows the available
18 supply and it shows that for a long period of time
19 there is available supply above the median and the
20 image shows how far above the median that is and the
21 scale on the left-hand side can indicate how many
22 gigawatts above the median the available supply is.
23 That is an example.

24 When we go to the response portfolio
25 there are numbers in certain instances associated with

1 the response portfolio as well. Those are the reasons,
2 as I say, if you want to make it black or white then I
3 reject the fact that there isn't any indication of how
4 far above the median.

5 Q. Well, both of the documents you
6 showed to me are supply side answers. As I understand
7 what this document is talking about, it is talking
8 about planning around the median, and I want to know
9 whether in terms of demand side criteria, after you
10 take off the things that we just talked about, life
11 extensions, demand management, NUGs, those kind of
12 things, to try to get from the basic load forecast down
13 to the primary load forecast from a demand side, is
14 there anything that tells us how far above and below
15 the median line planning around the median takes us?

16 I don't want supply side answers, I want
17 some demand forecasts that will help me on that point.

18 A. I am having difficulty understanding
19 the question. Maybe somebody else understands it
20 better? Because I'm going to go on the same track
21 again.

22 I don't have a different answer to you
23 unless you explain to me exactly what is it that --
24 demand response?

25 Q. I want to know how uncertain around

1 the median and, therefore, how far away from the median
2 line that you have shown me on page 14 you may get if
3 you are planning around the median so far as the future
4 demand is concerned?

5 MR. SNELSON: A. Mr. Dalziel in his
6 direct evidence used a figure which is page 25 of
7 Exhibit 682.

8 Q. I guess Mr. Dalziel I should be
9 talking to you. Yes. I've looked at that.

10 A. And you are asking for what
11 percentage, you know, what sort of demand forecast
12 could we met with the response portfolio, and the line
13 on this figure that is shown with the small black
14 squares or blobs, the upper line, shows the degree of
15 coverage of the load forecast uncertainty band that is
16 provided by the existing system, committed facilities,
17 contract facilities and the forecast of preferred
18 options.

19 So that is a starting point for planning
20 around the median, in that we believe we have resources
21 that can provide that degree of coverage. Capability
22 of acquiring additional non-utility generation, or
23 combustion turbines or so on would give additional
24 coverage to that.

25 Q. Well, if you are telling me, Mr.

1 Snelson, that I look to page 25 for planning around the
2 median, that tells me that I plan from zero to a 100.
3 Is that what I'm supposed to do, to plan from zero to a
4 100, or do I plan from 90 to 10, or where do I plan
5 around the median if I'm planning around the median on
6 that chart.

7 [10:13 a.m.]

8 A. As Mr. Shalaby has indicated, then we
9 have not defined a specific set of probabilities that
10 we will plan to. We haven't said we will plan to the
11 90th percentile of the load forecast or the 10th
12 percentile. But we do, by inspecting figures like this
13 and knowing what options are available to us in the
14 response portfolio, we have formed the judgment that we
15 have sufficient coverage for a period of time, that we
16 don't need to seek sufficient approvals today. And
17 that's the essence of planning around the median.

18 Q. Is the long and the short of it that
19 I can't look to anything that will give me a bandwidth
20 of uncertainty if I am planning around the median? Is
21 that the answer?

22 I mean, I have asked at least five times
23 so far and I don't want to ask it again. Do I take it
24 that there is no bandwidth of uncertainty around the
25 median that one uses to plan around the median to be

1 distinguished to be distinguished from the very
2 analytical and detailed calculation of uncertainty in
3 the DSP between planning to the lower, median and
4 higher load forecast?

5 A. I don't see how I can add to our
6 previous answers. We don't have anything beyond what
7 we have indicated, although we do have illustrations of
8 how the upper and the lower might be met in the cases
9 that were presented in our direct evidence.

10 THE CHAIRMAN: The difficulty I have with
11 this concept is that if you are talking about planning
12 around the median, it's very difficult to divorce
13 demand and supply because they are inter-related. And
14 that's what I take the answers to be, that you can't
15 say, well, planning around the median means we are
16 going to have this much area of demand that we have to
17 deal with. It's an inter-related thing. I guess
18 that's what the witnesses are saying.

19 MR. HEINTZMAN: I think they are saying
20 that. I think the question is whether, when you are
21 planning supply, what is it that you are supposed to be
22 meeting? I'll develop that as we go along.

23 Q. Some of the ingredients that you are
24 speaking here of, in particularly demand management and
25 non-utility generation are being laid on top of, as it

1 were or subtracted from, the basic load forecast.

2 That's the way this thing operates.

3 MR. SHALABY: A. This is how demand
4 management is incorporated in an integrated plan, yes.
5 Non-utility generation is dealt with in a different
6 way. The load displacement non-utility generation is
7 dealt with in a way similar to demand management.
8 Supply non-utility generation is in addition to the
9 existing system capability.

10 Q. But you are laying the
11 characteristics of demand side management on top of the
12 characteristics of the future load growth to try to
13 arrive at a net result.

14 A. Yes.

15 Q. And then you are laying the
16 characteristics of non-utility generation, and I'm not
17 suggesting you do it in this order, on that to arrive
18 again at the next band that you are trying to
19 determine.

20 A. That is correct.

21 Q. And I am suggesting to you that the
22 characteristics of the uncertainty of the demand
23 management program and the characteristics of the
24 uncertainty of the NUG program are of not the same
25 nature as the characteristics of uncertainty of the

1 basic load forecast. They would have their own
2 idiosyncrasies.

3 A. I accept that.

4 Q. Yes. So when that when you lay on
5 top of one system that has its own idiosyncrasies in
6 terms of uncertainty, other systems that have different
7 uncertainties, you don't end up at a position where you
8 are always at the median of the result; wouldn't that
9 be fair to say?

10 You have to lay systems that have the
11 same idiosyncrasies of uncertainty on top of each other
12 to always keep the median in the same place or
13 projecting in the same place, isn't that correct?

14 A. When you say you have to that, if we
15 had a choice that may be theoretically possible. But
16 we are dealing with projecting basic demand, and it has
17 various uncertainties. And we have to subtract from
18 that, for example, the demand management; and it has
19 various uncertainties.

20 And we went through a discussion with the
21 MEA I presume, Mr. Snelson and myself, on how
22 uncertainties in demand management either increase or
23 decrease the total bandwidth. And we came to the
24 conclusion that at this time the best we can say is
25 that they do not change the uncertainty in the

1 bandwidth.

2 And we acknowledge that the uncertainties
3 in demand management are different in nature. And we
4 said at the time that we don't feel that dealing with
5 that analytically is appropriate at this time because
6 we don't understand all the behaviour of the
7 marketplace and the behaviour of technologies and
8 customers acceptance.

9 And until we have a wide enough data
10 base, the analytical work is not going to be very
11 meaningful. So I am accepting the different nature,
12 but I am not accepting that we have to have similar
13 nature in order to arrive at conclusions.

14 Q. Well, I'm suggesting to you that
15 people have been doing this for some number of years.
16 And I will be coming to that in a moments. But let's
17 turn first of all to Exhibit 452.

18 And again, Mr. Mark asked you some
19 questions on this, and I don't want to repeat them but
20 I want to understand them. At page eight, dealing with
21 the question of demand management uncertainty.

22 And as I understand it, Mr. Chairman, and
23 I want to not go over the same areas Mr. Mark went over
24 on these issues, but I understand that you ruled that
25 Ontario Hydro can be presumed to have produced any

1 reports that are what I will call working reports and
2 reliable reports, but they will not be asked to produce
3 any what I will call debating memos between
4 individuals.

5 And on that basis, Mr. Shalaby, as I
6 understand the present situation, dealing with the last
7 sentence on page eight, Ontario Hydro has done no
8 probabilistic analysis of demand management uncertainty
9 and the issue is at the judgmental level.

10 A. There's judgment to relate, and I'm
11 trying to respect the premise you are starting with,
12 and that is not to repeat what we said to Mr. Mark.
13 But that last sentence refers to the large number of
14 factors just above there.

15 Penetration or delivery of demand
16 management programs are sensitive to a large number of
17 factors including, and there's three or four lines of
18 factors. The last line refers to those factors.

19 Q. Yes.

20 A. And what that sentence says is that
21 we cannot quantify in a rigorous way the uncertainty
22 around all of those factors, such as the field
23 performance of measures, the role of new technologies,
24 the selection of delivery approaches, and so on.

25 Now, in the exhibits in front of this

1 board, there are exhibits that show the probabilistic
2 analysis done to arrive at the bandwidth of the load
3 forecast. And there are statements in there and
4 discussions in there that show how you arrive at the
5 primary load forecast bandwidth which takes into
6 account the demand management, in addition to the basic
7 load forecast uncertainty. I can refer you to those
8 exhibits but I am sure you are familiar with them.

9 Q. No. You are saying that the primary
10 forecast bandwidth is inclusive of demand management
11 uncertainty?

12 A. It is.

13 Q. Could you refer me to those exhibits,
14 please?

15 A. Exhibit 467 is our most recent load
16 forecast report. And on page 20 of that exhibit, under
17 section six, which is entitled: Load Forecast
18 Uncertainty, there is a discussion of that subject.

19 Q. So that's arriving at the primary
20 load forecast.

21 A. Yes. They discuss the considerations
22 that lead them to believe that the primary load
23 forecast uncertainty band is similar to the basic load
24 forecast uncertainty band.

25 And Mr. Snelson discussed that to some

1 extent, as well. There are some factors in demand
2 management that increase the uncertainty and some
3 factors that decrease the uncertainty. And in our
4 judgment they offset each other given our state of
5 knowledge at that time.

6 Q. I will read that. But can you tell
7 me, you have told us the target for demand management
8 to the year 2000 is, if I am correctly remembering,
9 5,000 megawatts into the year 2014, 9,800 megawatts.
10 Now, are you deducting that amount? Your figures show
11 that you are deducting that amount in its entirety from
12 the median load forecast.

13 A. Yes.

14 Q. So you are taking 100 per cent of
15 your projected target, which is an upper target, I take
16 it. It's what you hope to achieve.

17 A. It is not an upper target. I hate to
18 interrupt, but that's a median expectation of what we
19 can get in demand management. And we are deducting at
20 this time an amount smaller than the target. We are
21 deducting 4,800. I indicated discrepancy between the
22 plan and the target for this year. So in the year
23 2000, we are deducting about 4,800.

24 Q. In this document or in your load
25 forecast?

1 A. In this document and in the load
2 forecast.

3 THE CHAIRMAN: "This document" being?

4 MR. SHALABY: This being 452, I assume.

5 MR. HEINTZMAN: Yes.

6 Q. I thought that you were deducting --

7 MR. SHALABY: A. Exhibit 452 is based on
8 Exhibit 467.

9 Q. 467?

10 A. That's correct.

11 Q. Yes. And it was my understanding
12 that for the year 2000 you were deducting the total
13 target of your demand management.

14 [10:24 a.m.]

15 Have I got that wrong?

16 A. The total planned amounts, the
17 planned amounts are slightly smaller than the targets.
18 But if your discussion is --

19 Q. Slightly small?

20 A. Slightly smaller. 4,800 as opposed
21 to 5,200.

22 Q. So what have you deducted when you
23 did your upper -- after publication of 452, what did
24 you deduct for demand management at the upper?

25 A. The same amount.

1 Q. So you deducted the same amount of
2 demand management at the upper load forecast as at the
3 median load forecast?

4 A. Yes.

5 Q. And what did you deduct when you
6 calculated your lower forecast?

7 A. The same amount again.

8 Q. Same amount again. So what you are
9 doing is taking what I would, therefore, call the
10 maximum amount as between those three amounts, because
11 they are all the same, and applied it no matter whether
12 you are at the upper, the median or the lower.

13 A. For the purposes of this analysis, we
14 did.

15 Q. Yes.

16 A. You could observe that in Exhibit 3,
17 for example, we had different amounts subtracted in the
18 upper and lower. So theoretically you could argue that
19 there's more available when the demand is higher, again
20 as Mr. Snelson indicated, there's more load to manage
21 and to improve the efficiency of; and you can argue
22 that there's less demand management available at the
23 lower load forecast.

24 But for the purpose of this analysis we
25 have done this last round we kept the amount the same.

1 Q. And if we look then to -- because I
2 think that point you just made there answers my
3 question. If you then go to page 9 of Exhibit 452,
4 there you are talking about demand management available
5 through mandatory energy efficiency standards and you
6 refer to 2,600 megawatts of demand management being
7 available through that mechanism; is that correct?

8 A. Through mandation, yes.

9 Q. Yes. And as to that ingredient of
10 demand management, as I understand it, you have allowed
11 for 100 per cent uncertainty on that element;
12 in other words, you have allowed the whole of the
13 mandated energy efficiency as uncertain?

14 A. No, my judgment is that we are just
15 showing the extent of risk if mandation does not come
16 about.

17 Q. No, but are you not carrying that
18 into your study. I mean, it says in the second line
19 that you identified about 2,600 megawatts of demand
20 management is available through government initiatives
21 in the areas of energy efficiency standards, and then
22 dropping down where you say whether the government may
23 or may not mandate this:

24 The exposure of the load forecast to
25 the risk that the government will not

1 implement the required standards and
2 regulations is shown in figure 3.2...,
3 which we then see, and you say:

4 In summary, the exposure of the load
5 forecast to uncertainties associated with
6 mandated demand management is judged to
7 be about 2,600 megawatts, which is the
8 total of the mandated energy efficiency standards.

9 A. Yes.

10 Q. So you have given, as I understand
11 it, 100 per cent uncertainty to that element of demand
12 management.

13 A. If mandation doesn't come around then
14 there is an exposure of that amount and, again, Mr.
15 Snelson went over that, he said that if mandation
16 doesn't come around then there are other ways of
17 capturing part of that potential. It may not be 100
18 per cent but it could be a portion of that.

19 Q. But this statement is telling us that
20 you are allowing 100 per cent uncertainty on one
21 element of your demand management plan.

22 A. We are relying on 2,600 megawatts of
23 mandation, that's all it says. But allowing 100 per
24 cent uncertainty -- maybe I will follow your question
25 to the end and see what that really means.

1 Q. Well, the 2,600 then is included in
2 the 48- or 5,200 or the 9,800 by the year 2014?

3 A. It is included in that latter figure
4 you mentioned, yes.

5 Q. All right. So 100 per cent of it is
6 included in that 9,800 megawatts.

7 A. Yes.

8 Q. And yet what you are telling us
9 here -- and that's at both the high, medium and low
10 load forecast?

11 A. Yes.

12 Q. And notwithstanding that, what you
13 are telling us here is that there is 100 per cent
14 uncertainty with respect to that particular element of
15 demand management?

16 A. That's the piece I'm having
17 difficulty with. We are not saying there's 100 per
18 cent uncertainty, we are saying that if mandation does
19 not come about then that piece is lost from mandation,
20 we can recover a portion of it through programs, but we
21 are identifying to what extent we are relying on
22 mandation. That's all we are saying.

23 We are not passing any judgment as
24 there's 100 per cent risk or 50 per cent risk or 20 per
25 cent risk.

1 Q. Or stating any percentage of risk?

2 A. We are not stating that, we are not
3 assigning a probability on whether government will or
4 will not mandate and to what extent. We are just
5 identifying to what extent our plans are relying at
6 this time on government mandation.

7 Q. And if you turn to the NUG,
8 non-utility generation, component of the plan, and
9 again it's 4,200 megawatts by 2014, did you deduct that
10 4,200 megawatts when you were dealing with the upper
11 load forecast when you came about to prepare the plans?

12 A. Yes, deduct and add. I'm not going
13 to get into mechanics too much, but some of it is
14 deducted, some of it is added but it's included, the
15 4,200 megawatts are included in ways that we have
16 described in detail to this Board at various times.

17 Q. Whether you are the upper, medium or
18 lower load forecast?

19 A. It is the same amount in this round
20 of analysis. In the analysis that we did in Exhibit 3
21 we had different amounts. Again theoretically the
22 amounts would be different. For example, under low
23 load forecast the state of Ontario industry, for
24 example, could be different than under upper load
25 forecast, and the amount of cogeneration potential

1 could therefore be different, gas prices could be
2 different.

3 It's a complicated question that we
4 thought for simplicity at this stage we will assume the
5 same amount.

6 Q. Well, do you have any support, Mr.
7 Shalaby, in any document whatsoever, planning study,
8 or paper written by somebody that this is an acceptable
9 way of planning, that you plan around the median in
10 this way by allowing no change to your NUG, your demand
11 management, and shoot for generation purposes solely at
12 the median in this fashion.

13 Do you have any paper that supports this
14 proposition?

15 MR. SNELSON: A. This isn't our
16 proposition.

17 Q. Well, whatever it is, and I don't
18 want to get into a debate, do you have any studies that
19 support planning around the median in the way that you
20 have proposed to this Board?

21 MR. SHALABY: A. I detect two sorts of
22 issues you are talking about in that one question. One
23 is validity of subtracting the same amounts under
24 different load forecasts.

25 Q. And that is going to get me into how

1 you can determine uncertainty around the median in some
2 meaningful way.

3 A. All right. If I may, if I can handle
4 that first question first, and that is, validity of
5 subtracting the same amount under different load
6 forecasts.

7 We have studied or we have assumed
8 different amounts in Exhibit 3 and the amounts assumed
9 were not significantly different, they were different
10 but not significantly different, and one had to make
11 assumptions about what led to a high load forecast or a
12 low load forecast. And if one knew why are we in high
13 load forecast or what the driving factors were, is it
14 because there are more people in Ontario, or is it
15 because there's more economic activity from the
16 industry in Ontario, or is it because natural gas
17 prices became very high and people switched to
18 electricity.

19 One has to know more about what took us
20 to the higher load forecast or, conversely, what took
21 us to the lower load forecast to be able to judge
22 whether demand management potential is really higher or
23 lower.

24 There are many, many ways you can arrive
25 at the higher load forecast and many, many ways you can

1 arrive at the lower load forecast and to necessarily
2 say that at that level of electricity demand we have
3 higher or lower demand management requires a large
4 number of other assumptions.

5 And for the purposes of this analysis we
6 felt that the analysis gives the information we want
7 without having to further refine the estimates of
8 demand management and non-utility generation.

9 Q. Well, but the DSP - and I don't want
10 to go over this - has a very distinct planning
11 philosophy of planning to include the upper load
12 forecast; right?

13 A. Yes.

14 Q. You moved to something that is -- I
15 find it very difficult to put my hands on what it is,
16 but you have been calling it planning around the
17 median.

18 A. Can I help you, Mr. Heintzman, and
19 that's something that I tried to introduce in my direct
20 evidence, because maybe the term gives us difficulty,
21 If we focus on the words they could give us difficulty,
22 but if you think of it as a way for managing
23 uncertainty, think of planning around the median as
24 Hydro's approach to managing uncertainty.

25 Q. Well, I have thought of that a lot

1 and one thing I can think of is that you are going to
2 have a band of uncertainty around the median.

3 A. We accept that.

4 Q. Well, but you have not told us what
5 that band is. You say there's nothing you can point to
6 me to say this is Hydro's judgment, even the word
7 judgment, about what is the band around the median,
8 even if we are not going to work to a band to the upper
9 and the lower?

10 A. Maybe we can go back to page 14 of
11 Exhibit 452 and we can show there and we can see there
12 the band of demand for electricity around that median.

13 Q. But you have told us you are planning
14 around the median. That necessarily implies something
15 above the median as a probability.

16 A. Above and below.

17 Q. Yes. So that if you were to plan
18 above and below that median line--

19 A. Yes.

20 Q. --then I suggest to you that you are
21 going to have facilities and you are going to plan on
22 having facilities and you are going to ask this Board
23 to have facilities available to plan around the median,
24 then you are going to have to have facilities there not
25 when the magic available supply line hits the median

1 line but at some point before that.

2 Doesn't that follow as night follows day?

3 MR. SNELSON: A. If the facilities which
4 you are relying upon for flexibility need the approval
5 of this Board, and if the facilities that you currently
6 have available to you, which are defined by the
7 available supply line, are not sufficient, yes.

8 Q. Yes. And I am saying that what's
9 happening here is that you have not put before the
10 Board any band of uncertainty around the median that
11 will permit the Board to judge when new supply is
12 necessary in order to do what you are saying;
13 that is plan around the median.

14 A. We have provided illustrations of
15 upper and lower load growth which we believe are quite
16 conservative in some respects in that the upper load
17 growth scenario, for instance, does not show any of the
18 new supply -- any of the additional supply being
19 non-utility generation, it shows it as being combustion
20 turbines and things that Ontario Hydro would build. So
21 we consider that to be something of an outer case.

22 Q. All right. So you are putting before
23 this Board then the upper load forecast.

24 A. We did so in our direct evidence,
25 yes.

1 Q. Then you are saying that that is the
2 level of uncertainty around the median to which this
3 Board should plan?

4 A. We are giving it as an illustration
5 of upper load growth that is actually comparable in the
6 degree of coverage it provides to what was given in
7 Exhibit 3.

8 Q. Yes. And, therefore, you are telling
9 this Board that if it wants to plan around the median
10 that it should plan to that upper load forecast?

11 A. We are giving it an illustration of
12 how we could respond to upper load growth.

13 Q. And is the answer then to my
14 question, yes, if you are telling the Board to plan
15 around the median then it would plan to that line, to
16 include that line?

17 A. We are showing it as an illustration
18 that planning around the median has certain
19 implications and that we could follow that path, if the
20 load was to follow the upper load forecast path.

21 Q. And, therefore, as a planner, you are
22 putting that forward as within the planning realms of
23 planning around the median?

24 A. We are showing it as an illustration
25 of planning around the median, yes.

1 Q. Yes. Well, that's good to hear.

2 Now, could I then turn to a document which I have given
3 to you called Assessing Future Supply and Demand
4 Uncertainties 2000 to 2010, and if the Board could be
5 handed a copy of that document.

6 THE CHAIRMAN: That will be made an
7 exhibit.

8 MR. HEINTZMAN: Yes, please, Mr.
9 Chairman.

10 THE REGISTRAR: 693.

11 ---EXHIBIT NO. 693: Document entitled: Assessing
12 Future Supply and Demand Uncertainties
2000 to 2010.

13 [10:40 a.m.]

14 MR. HEINTZMAN: Q. And have you had a
15 chance to read this document, I guess particularly Mr.
16 Shalaby, Mr. Dalziel, and Mr. Snelson?

17 MR. SHALABY: A. I have not.

18 Q. I am sorry?

19 A. I did not read it.

20 Q. You did not read it?

21 A. I got it this morning so I did not
22 read it.

23 Q. I'm sorry. I thought you got this on
24 Friday.

25 MR. SNELSON: A. I got mine on Friday

1 with a pile of other materials and I glanced through
2 it. I can't say I have read every word.

3 Q. Well, I will go through it. And if
4 need be, if we should come back to it later I would be
5 happy to do so. You are familiar with the Electric
6 Power Research Institute in Palo Alto, California,
7 aren't you?

8 A. Yes.

9 Q. And would you consider it a reputable
10 institute with respect to the publication of studies
11 and information of this nature?

12 A. Yes.

13 Q. And having read the document, do you
14 accept it as a reasoned and reliable document with
15 respect to assessing supply and demand uncertainties?

16 MR. B. CAMPBELL: Mr. Chairman, I think
17 simply putting it as having read the document is
18 perhaps a little strong. I think Mr. Snelson said he
19 had an opportunity to glance through it among the
20 several other inches of material.

21 MR. HEINTZMAN: Q. Well, subject to you
22 rereading it over lunch and if necessary, letting me
23 know later, can you express a view as having read the
24 document on that question subject to the brevity of
25 your review?

1 MR. SNELSON: A. Well, it discusses the
2 U.S. situation and many of the trends that it indicates
3 seem to be reasonable. But I couldn't express an
4 opinion as to how accurately it reflects the U.S.
5 situation.

6 Q. Well, perhaps we should read the
7 first sentence.

8 Customer needs for space conditioning,
9 process heat and power and other energy
10 derived services can be met in a variety
11 of ways, and electricity must compete for
12 these markets with other energy sources.

13 Similarly, total customer needs for
14 electricity services can be met in a
15 variety of ways, including utility
16 generation, demand side management,
17 imports, customer self-generation, or
18 electricity produced by independent power
19 producers.

20 Is that a fair statement?

21 A. It seems to be very fair.

22 Q. And if we could turn to page two.
23 Near the bottom of the page, in discussing the demands,
24 particularly in the industrial sectors the authors say
25 in the last full paragraph:

1 Electricity demand in the industrial
2 sector has defied economists'
3 predictions. As recently as two years
4 ago, economists argued that heavy
5 industry was in irreversible decline.
6 However, recent experience shows a rising
7 industrial output that has been pushing
8 production to its capability limits.
9 Now, this was written in March of 1989, but that's a
10 statement that was representative at least of that time
11 and could be representative of the future.

12 A. I couldn't express an opinion on
13 that.

14 Q. All right. Let's go on to page 3 to
15 try to pick up the authors' analysis of uncertainty.
16 And about three quarters of the way down page 3, the
17 heading is Most Forecasts Today Explicitly Account for
18 Future Uncertainty. Would you agree with that as a
19 fundamental statement?

20 A. I'm not sure from this document, from
21 that particular statement whether it's referring to
22 forecast of demand or forecast of various supply
23 options. And so I'm not quite sure what is being
24 referred to.

25 Q. Well, I think it's pretty clear that

1 it's talking about demand at this point. But if it
2 applies to demand, would you agree with that?

3 A. I would agree that certainly we
4 express the probability bands and uncertainty in our
5 demand forecast.

6 Q. Recognizing that actual electricity
7 demand in the future will depend on the
8 resolution of many uncertainties over
9 time, most forecasts today include a
10 "best guess" or baseline projection.
11 This means that it is equally likely that
12 the actual demand for electricity
13 services will exceed or fall short of
14 that projection. And there is an
15 associated band of uncertainty that
16 encompasses 80 per cent of the
17 probability that actual demand will fall
18 in that range.

19 Now stopping there, that's the approach that was taken
20 in the DSP?

21 A. It appears consistent with that
22 approach, yes.

23 Q. And the authors are saying that's the
24 approach that most forecasters use, would that be a
25 fair statement?

1 A. I couldn't express an opinion as to
2 what most forecasters are using in the United States at
3 the moment. I am not sufficiently familiar with them.

4 Q. Well, are you familiar with other
5 utilities are using in North America in terms of demand
6 forecasting?

7 A. It is common to use bandwidths around
8 load forecasts. Exactly what widths of bandwidths have
9 been chosen by different utilities, I'm not familiar.

10 Q. And then the authors then refer to
11 the North American Electrical Reliability Council's
12 forecast in the next paragraph, which is an aggregation
13 of individual utility projections for the next decade,
14 has included a bandwidth of uncertainty about the
15 baseline estimates. And then refers to the protection
16 of 1.9 per cent median.

17 The band of uncertainty surrounding the
18 NERC forecast reflects the probability that the 10-year
19 growth rate will be higher or lower than the 1.9 per
20 cent median projection. Specifically, the forecast
21 shows that there is a 10 per cent probability that the
22 growth rate will either exceed 647 gigawatts or be less
23 than 529 gigawatts.

24 And you will see from the next page that
25 the bandwidth of uncertainty similar to the high,

1 median, and low forecast in the DSP is shown, but it
2 indicates that the median forecast is closer to the
3 high than to the low forecast.

4 And the authors comment upon the fact
5 that if you look particularly at figure three, that you
6 will find four pages further on that the probability
7 curve of demand is not symmetrical but is asymmetrical
8 in the way displayed on that figure 3.

9 Is that something that you would be
10 familiar with, Mr. Snelson, that you wouldn't
11 necessarily expect an absolutely bell-shaped curve for
12 your demand forecast?

13 A. Well, these are kind of things that
14 can be explained in different ways. I am not familiar
15 with all of the particulars, but I would point out that
16 the symmetry or lack of symmetry in the distribution
17 when it's expressed in percentage growth, equivalent
18 percentage growth, then the shapes get changed when you
19 show those as being based on megawatts of growth.

20 Those questions about whether things are
21 normal, above normal, and these are terms which the
22 load forecasters use all the time. But there's no
23 inherent reason why the distribution should be
24 symmetrical.

25 Q. Right. Let's pick up the discussion,

1 then, on page four. In the third full paragraph, the
2 authors state that, where they say:

3 The demand probability distributions
4 in figure 1 also show that uncertainty is
5 not symmetrical about the median
6 projections. For example, events that
7 would increase the total demand for
8 electricity in 2010 by 84 gigawatts are
9 considered equally likely as events that
10 would lower total demand by 139
11 gigawatts.

12 So that would be reflective of the fact that we don't
13 necessarily have to expect absolute symmetry around the
14 median?

15 A. That's what is being indicated here.

16 I don't know the particulars of these numbers.

17 MR. B. CAMPBELL: Mr. Chairman, could we
18 just be certain here for the record that when my friend
19 is asking questions about symmetry, he's talking about
20 symmetry in terms of the expression of growth in
21 percentage terms? Can we take that as read into his
22 question? Because that's the way the graph of this
23 document works. I am concerned about this, Mr.
24 Chairman, because the similar graphs that have been
25 produced and were extensively discussed in various

1 panels, and most particularly Panel 1 and to some
2 extent Panel 4 are not expressed in per cent terms.
3 And, therefore, the mathematical function is somewhat
4 different. So I want to be clear what the questions
5 are based on. We are talking symmetry in per cent
6 terms. And if my friend would be careful, if he's
7 moving away from that to make it clear.

8 MR. HEINTZMAN: I'm not really concerned
9 about those issues. I'm more concerned about the issue
10 of uncertainty which we will be coming to in this
11 paper.

12 MR. B. CAMPBELL: I'm sorry, Mr.
13 Chairman, but it is important if we are going to deal
14 with a expression of uncertainty as a probability
15 distribution, it is critical to know whether that is
16 expressed as a probability of a growth rate or whether
17 it is a probability associated with absolute megawatts.
18 The curves will look quite different depending on which
19 approach my friend is taking. And I have taken,
20 judging by the use of this paper, to be speaking of a
21 percentage terms in these questions. And I think it is
22 important to anybody who is trying to understand this
23 that that be clear.

24 MR. CHAIRMAN: So far, at least, that
25 appears to be the case.

1 MR. B. CAMPBELL: Thank you, Mr.
2 Chairman.

3 MR. HEINTZMAN: Q. Bottom of page four,
4 the authors state, first of all in heading terms:

5 Planning resources to meet an
6 uncertain future demand requires
7 developing a wide range of flexible
8 options.

9 And then continues:

10 Forecasts that consider the full range
11 of future possibilities are much more
12 useful for utility planning than single
13 point protections. In fact, the more
14 expansive the forecasting process, the
15 more likely it will encompass the future
16 utilities will actually face.

17 Now, is that a fair statement?

18 A. Are we looking the last sentence?

19 THE CHAIRMAN: Looking at the last two
20 paragraphs.

21 MR. HEINTZMAN: Q. The last two
22 sentences under the heading.

23 MR. SNELSON: A. The last sentence I
24 think is clearly self-evident, and that is that the
25 wider the range of things you have looked at in the

1 future, then the greater the chance that what actually
2 happens will be encompassed. I think that is almost
3 self-evident. And the question about usefulness is a
4 bit harder to judge.

5 Q. Well, these writers are saying that
6 if you have a plan that considers the full range of
7 future possibilities, it's much more useful for utility
8 planning than single point projections, do you agree
9 with that?

10 A. Certainly one should consider a range
11 of possible futures.

12 Q. And that's the approach that the DSP
13 took?

14 A. Yes.

15 Q. And then, sir, if we turn over to
16 page five. Top of the page:

17 Planning resources to meet that future
18 requires developing resource options that
19 will best position a utility and its
20 stakeholders across all the possible
21 outcomes the forecaster can envisage. In
22 addition to providing for an appropriate
23 mix of base load, intermediate and
24 peaking requirements, some of these
25 options may serve to maintain reliable

1 service under higher than expected load
2 growth.

3 Do you agree with that?

4 A. Are we looking at the last sentence,
5 in addition to providing for an appropriate...

6 Q. I'm looking at both sentences.

7 A. Well, I see them as two separate
8 things to a degree. They are related, of course.

9 Q. Let's do the first sentence first,
10 then.

11 Planning resources to meet that future
12 requires developing resource options that
13 will best position a utility and its
14 stakeholders across all the possible
15 outcomes the forecaster can envisage.

16 Do you agree with that?

17 A. You want to be in a position to be
18 able to meet a range of possible outcomes. You cannot
19 always be in the best position across all possible
20 future outcomes because some responses to one
21 uncertainty, which are good, may be poor responses if
22 another uncertainty comes to pass. So that there's a
23 degree of compromise that has to be reached.

24 Q. And that's why you have to develop a
25 flexible plan that is able to meet a moving target.

1 A. You want to be able to maintain
2 flexibility. And the planning around the median
3 approach is putting quite a high priority on
4 maintaining flexibility.

5 Q. But you have to be able to have
6 flexibility to meet a moving target. That's what the
7 authors are saying.

8 A. Certainly.

9 Q. Yes. And the second sentence goes on
10 to say:

11 In addition to providing for an
12 appropriate mix of base load intermediate
13 peaking, some of the options may serve to
14 maintain reliable service under higher
15 than expected load growth.

16 Do you agree with that?

17 [10:55 a.m.]

18 A. Some options are capable of doing
19 that, yes.

20 Q. That should be in the planning
21 process.

22 A. Well, you have to weigh that with the
23 next sentence:

24 Others may provide insurance
25 against the financial risks of having

1 overbuilt for a lower-than-expected load
2 growth.

3 And so you have to provide a balance
4 between the degree of coverage you provide for upper
5 load growth versus the degree to which you want to
6 avoid overcommitment in lower load growth.

7 Q. Yes. And the authors in the middle
8 of page 5 say:

9 For this report, we use the EFS
10 median forecast and the results of a
11 related EEI effort to assess future
12 supply uncertainties to show how a
13 "best guess" supply/demand balance might
14 be achieved in 2000 and 2010. To
15 illustrate how the relative contribution
16 from various resource options might vary
17 with different outcomes of demand, we
18 have also developed possible supply
19 strategies for the high- and low-
20 growth scenarios.

21 A. Sorry, I have lost you. Where are
22 you reading now?

23 Q. Just below the heading in the middle
24 of the page, I just read the paragraph that starts:
25 For this report, we use...

1 A. Oh yes, okay.

2 Q. So what the authors are doing is
3 assessing these various elements, and if you would turn
4 with me to figure 4 - and we will come back to it in
5 more detail - what the authors have done here is assess
6 these uncertainties around the upper, which you will
7 see at the 2.6 demand growth level going from left to
8 right, the median which we saw from the graph before at
9 2.1 per cent demand growth, again assessing the
10 uncertainties of the various elements, and the lower
11 1.3 per cent demand growth. Do you see that?

12 A. I see it. I can't express any
13 opinions on this table because it's a whole load of
14 numbers and I don't know what goes behind these
15 numbers.

16 Q. Obviously you don't know what's
17 behind the numbers, but the process you can understand.
18 For the net existing capacity in the year 2010, for
19 instance, the probability is for the high load growth,
20 the new existing system could be at 616 gigawatts or it
21 could be at 627 or 584 gigawatts; that is, you don't
22 know to what extent future environmental regulation,
23 cost of maintaining and life extending your plants,
24 what your plant will be in 2010 with 100 per cent
25 degree of certainty; do you?

1 A. That is correct.

2 Q. All right. Then they set forth under
3 the heading Planned Utility Additions what the
4 utilities had then planned for the range of uncertainty
5 at each of the demand growth levels.

6 So that for -- let's take the median
7 growth, the high plan was for 85 gigawatts in 2010, the
8 median for 80 and for the lower at 65 gigawatts. Do
9 you see that?

10 A. I see the numbers.

11 Q. Yes. And similarly for demand side
12 management for a situation where you have high load
13 growth they are planning on 190 gigawatts as the demand
14 side management, but even in the high scenario the
15 median forecast is 70 gigawatts. Do you see that?

16 A. I see that, yes.

17 Q. And the lower in the high demand
18 growth is 30 gigawatts; whereas you can see the numbers
19 are considerably lower as you move down into the median
20 or lower load growth scenarios for demand management?

21 A. I'm sorry, what is lower?

22 Q. The demand side management numbers--

23 A. Yes.

24 Q. --are lower, some of them are lower
25 and some of them are higher, but each of the higher

1 median and lower numbers for the median forecast are
2 lower respectively than the numbers if you have high
3 load growth.

4 A. They are in this table, yes.

5 Q. Yes. So that what we see here is,
6 the authors are projecting the uncertainty around each
7 of the high or median or low growth demand scenarios
8 for each of the elements that you have to deduct off
9 your basic load forecast; right?

10 A. They appear to be doing that, yes.

11 Q. And they conclude on the right-hand
12 side that -- let's just take planning around the
13 median, that --

14 A. I don't think that this says anything
15 about planning around the median.

16 Q. Well, let's look at the median line.
17 The median line shows that you - and you have to
18 unfortunately add the ones that they already plan on -
19 let's take the median line of the median, the planned
20 utility additions are 80, the additional needed supply
21 is 124, so that's 204 gigawatts planning around the
22 median but it could be as much as 65 plus 298 which is
23 363.

24 A. I'm sorry, you are adding together 80
25 plus 60?

1 Q. 80 planned utility additions--

2 A. Yes.

3 Q. --plus the additional needed supply
4 on the right-hand side of 124.

5 A. Oh, I see. Okay.

6 Q. That's what the report is telling us
7 would be 204 gigawatts if you are planning at the
8 median, but if you are planning - and, sorry, if I use
9 the words around the median - you could need as much
10 as, on the next line below that, 65 plus 298 -- if you
11 don't get the demand management and projected
12 non-utility generation that you want, you could get 65
13 or need 265 plus 298 or 363 gigawatts?

14 A. I think that's 65 plus 298.

15 Q. Yes.

16 A. You said 265.

17 Q. Sorry.

18 A. Okay.

19 Q. 65.

20 A. Yeah, 363.

21 Q. 363. So that if you are planning in
22 that band of uncertainty, it may be that you will need
23 an amount of generation that is up in the range of your
24 upper load forecast just by virtue of the uncertainty?

25 A. Well, as I said, I can't express an

1 opinion as to where these numbers come from. I also
2 don't know from this table the degree to which
3 correlations have been accounted for.

4 So what is the probability of having the
5 lowest amount -- sorry, the lowest amount of existing
6 capacity with the lowest amount of utility additions
7 with the lowest amount of demand side management with
8 the lowest amount of projected non-utility generation
9 and lowest amount of imports, I have no idea what the
10 probability would be assigned to such a scenario.

11 Q. Exactly. But that is the very thing
12 that these kind of studies and this kind of analysis
13 goes through to determine, even if you are worrying
14 about planning within a specific planning criteria, and
15 I will use the words around the median, that it has a
16 considerable amount of uncertainty that may require you
17 to plan for a considerable amount of generation above
18 the median; isn't that fair?

19 A. There are uncertainties that could
20 cause you to require more generation than the median
21 and we have acknowledged that and our planning around
22 the median approach acknowledges that there are
23 uncertainties.

24 But I can't draw your conclusion from
25 this particular figure because I don't -- let's say

1 each of these is a 10 per cent probability, okay,
2 there's 10 per cent chance of the existing system
3 having less than 550 megawatts, and 10 per cent chance
4 of the utility additions being less than 65 gigawatts
5 or whatever the units are, and so on across the table.

6 There's one, two, three, four, five
7 components. So the simple probability theory suggests
8 that's a one in 10 to the 5 chance. Now, I don't know
9 what probabilities have been assigned to this, I don't
10 know whether there have been any assumed responses in
11 this.

12 For instance, if demand side management
13 is not achieving its objectives and growth is high,
14 then you will be willing to pay more for non-utility
15 generation and you should get more non-utility
16 generation. So I don't know how those sorts of
17 responses have in fact come into this table.

18 Q. But let's just take demand side
19 management. It is perfectly within normal utility
20 practice to plan on a probability of not achieving your
21 full demand management?

22 A. That is one of the reasons that we
23 are pleased to be able to show projected surplus in the
24 year 2000.

25 Q. Can you answer my question. Is it

1 not standard utility practice to plan for the
2 probability or not of achieving demand management?

3 A. I don't believe it necessarily is
4 standard utility practice.

5 Q. Well, do you know whether it is or it
6 isn't?

7 A. I think demand management is one of
8 these evolving things in utility practice where there
9 isn't a book that says: Here is standard utility
10 practice on planning for demand management.

11 Q. Well, can you tell me whether or not
12 it is or is not standard utility practice to have
13 regard to the probability of success of demand
14 management?

15 A. It's standard utility practice to
16 plan on the basis of uncertainty in all of the
17 components of your plans, including demand management,
18 load forecast and so on. Whether those necessarily are
19 separated out and dealt with separately, is another
20 issue.

21 Q. Well, my question is specifically
22 directed to demand management. Is it not standard
23 utility practice to try to deal with the issue of
24 uncertainty when you are dealing with demand
25 management?

1 A. Clearly we should recognize and we do
2 recognize that there are uncertainties associated with
3 our demand management program in both directions.

4 Q. And that recognizes that there is a
5 probability that you will not get the maximum amount of
6 demand management?

7 A. There is a probability that you will
8 not get your targeted amount of demand management.
9 There is a probability you will get more than your
10 targeted amount of demand management.

11 Q. Yes. And that there's a probability
12 that you will get less demand management at the median
13 than you will at the upper load forecast?

14 A. I'm sorry, I don't necessarily
15 understand that.

16 Q. That there is a probability you will
17 get less demand management at the median load growth
18 than at the upper load growth?

19 A. I believe there are different
20 opinions having regard to that.

21 MR. B. CAMPBELL: Mr. Chairman, I would
22 remind my friend that these matters were extensively
23 canvassed in both Panels 1 and Panel 4.

24 THE CHAIRMAN: I'm not sure this
25 particular issue was canvassed in Panel 4.

1 MR. B. CAMPBELL: Absolutely, Mr.

2 Chairman. I think it was dealt with by Mr. Burke as
3 part of Panel 4, the load growth scenarios that might
4 be associated with the upper, whether there would be
5 more or less demand management for different kinds of
6 economic growth.

7 My recollection is they were dealt with
8 in both of those panels.

9 MR. HEINTZMAN: Absolutely. But the
10 whole integration of these panels is what we are
11 dealing with right now, is how do you arrive at a
12 sensible plan when you have these uncertainties.

13 THE CHAIRMAN: Go ahead.

14 MR. B. CAMPBELL: I don't disagree with
15 that, Mr. Chairman, but I do say that does not give
16 carte blanche to go back to matters that have been
17 extensively covered.

18 MR. HEINTZMAN: Q. In any event, Mr.
19 Snelson son or Mr. Shalaby or whomever, the kind of
20 analysis that is set forth on figure 4 to determine the
21 probabilities of the ingredients of the plan in order
22 to arrive at a sensible or reasonable calculation of
23 band of uncertainty in totality is something that
24 utilities do in North America; is it not?

25 MR. SNELSON: A. Most utilities in North

1 America do not project their demand/supply balances as
2 far as 2010 and do not include such factors in their
3 planning.

4 Q. Most do not?

5 A. That's my understanding.

6 Q. I see. Well -- and this paper is
7 written --

8 MR. SHALABY: A. You also indicated
9 giving probability, I think Mr. Snelson went on to
10 indicate that figure 4 does not show any probabilities,
11 it just shows a range; it could be this high, it could
12 be this low. It doesn't indicate what the probability
13 is.

14 Q. But figure 3 does deal with
15 probability.

16 A. Only of one variable as I can see it
17 and that is the total demand.

18 Q. Yes.

19 A. Figure 4 shows a lot more variables,
20 unless the probabilities are elsewhere, they are not on
21 figure 4.

22 Q. No, but figure 3 is a probability
23 analysis of one element in what we have on figure 4,
24 that is, the future load growth absent the other
25 characteristics.

1 A. Yes.

2 Q. And I am suggesting to you that it is
3 equally possible and it is normal to calculate your
4 probabilities of your other ingredients to arrive at a
5 concluded analysis?

6 A. It is possible we accept, normal is
7 what Mr. Snelson is indicating to our knowledge is not
8 common practice.

9 Q. But if you do take these -- this
10 paper was written some three years ago. This is not
11 new on the horizon, this kind of analysis; is it?

12 MR. SNELSON: A. As you say, this paper
13 was written three years ago.

14 Q. So this kind of analysis is not new
15 on the horizon; is it?

16 A. Well, it's been there for three
17 years.

18 Q. Yes. And in fact you have told me
19 already that it's inherent in the DSP that there are
20 these kind of calculations in the DSP to take account
21 of the differences at the high, medium and low load
22 forecast?

23 A. To some degree, yes.

24 Q. Yes. And that when you do take them
25 into consideration, the inevitable result - and I think

1 you have already told me this, Mr. Snelson - is that if
2 you want to plan to include that uncertainty, even
3 around the median, you are going to be planning to
4 something above the median, that necessarily follows
5 from the concept of uncertainty?

6 A. You are going to be planning to have
7 flexibility to accommodate a range of outcomes both
8 above and below the median.

9 Q. And if you turn to page 6 of the
10 document in about the fifth paragraph, starting with
11 the word "exactly":

12 Exactly how much existing utility
13 capacity can contribute to meeting total
14 customer needs in 2010 depends on the
15 effectiveness of life extension and
16 performance enhancement programs, on the
17 relative attractiveness of other options,
18 or on the anticipated level of
19 demand net of demand side management.

20 Do you agree with that sentence, Mr. Snelson?

21 A. Well, clearly how much the existing
22 utility capacity can contribute depends on the
23 effectiveness of life extension and performance
24 enhancement programs.

25 The other aspect of that sentence seemed

1 to be more to do with how much you need to depend on
2 the existing utility capacity rather than how much it
3 can provide.

4 Q. And then the authors continue:

5 A probability distribution of the
6 expected contribution from existing
7 capacity based on an assessment of these
8 factors is also shown in figure 5. For
9 median demand growth scenario the
10 contribution from existing capacity
11 ranges from 550 gigawatts to 625
12 gigawatts, with a median value of 610
13 gigawatts.

14 And you will see that if you turn back to the prior
15 page, that the life extension is not an absolute
16 number, it's a probability number. Do you see that?

17 A. Yes. And given the rationale for
18 providing it one would expect there to be some
19 correlation between the capability of the existing
20 system and the degree to which it's required.

21 I see the words and the numbers here.
22 You have to be careful in interpreting these types of
23 studies because there are correlations between
24 different types of programs that in a probability study
25 you would have to acknowledge, otherwise you are likely

1 to get the wrong result.

2 Q. Well, in the present case, have you
3 taken the same amount of life extension off to arrive
4 at your major new supply requirements in both the
5 median and the high and the low load forecast?

6 MR. SHALABY: A. Yes.

7 Q. So again you have --

8 A. Now, under the lower Mr. Dalziel
9 indicated that some units at Lakeview, for example,
10 would be treated differently or earlier, and the Hearn
11 and Keith units, for example, under the upper are
12 brought back into service but are not brought back into
13 service in the lower.

14 So with respect to Lambton and Nanticoke,
15 for example, I think the assumptions are similar. But
16 for other units assumptions may be different. So even
17 in our analysis we show a little difference in how
18 existing units continue to operate under upper and
19 under lower.

20 Q. But in the case of bringing Hearn
21 back on, that's not a life extension issue, that's just
22 it's sitting there and are you going to turn it on kind
23 of issue; isn't it?

24 A. Well, there is a little more than
25 just bringing it on and turning it on, there's work to

1 be done to bring it on.

2 Q. What I want to know, did you go
3 through any probabilistic analysis with respect to
4 those units that are life extended here, or did you
5 just take the same life extension number for the life
6 extension units that we have been debating and apply it
7 on the upper, medium and lower forecast?

8 [11:15 a.m.]

9 A. Essentially taking the same numbers,
10 yes.

11 Q. And again, you didn't take any
12 probabilistic analysis around the upper or median or
13 lower numbers, you just used the same number
14 throughout?

15 A. Yes. And again, the reasons are
16 partly because, similar to what we said about demand
17 management, unless one understands the factors and what
18 could go one way or the other - without a lot of
19 understanding, and a lot of experience - a
20 probabilistic analysis would look fancy but it would be
21 useless.

22 Q. But I have been hearing that your
23 confidence in life extensions is due to the fact that
24 there is experience about that in the United States; is
25 that not correct?

1 A Yes, partly that was one of the
2 factors.

3 Q. And I am suggesting to you that in
4 the United States they do probabilistic analysis to
5 determine, not that it is 100 per cent certain that
6 those plants are going to be extended, but that there
7 is a, whatever it is, probability that those plans will
8 be extended?

9 A. Yes, if you look even at the range
10 quoted in this study, the range is pretty narrow.

11 Q. But it's a range that's arrived at --

12 A. Plus 2 or 3 per cent and minus 7 or 8
13 or 10 per cent. Even when one attempts to put
14 probabilities, the entire range is sort of 15 per cent
15 wide and I assume if somebody puts a bell curve on
16 that, then the area of high probability could be 3 or 4
17 or 5 per cent wide.

18 So I am just saying even with a little
19 bit of data here, it doesn't indicate it could be 100
20 on one sides and 1,000 on the other side. It says 550
21 on one end and 625 on the other end, with a 610 median.

22 So even in this data doesn't indicate
23 that it's a highly uncertain variable.

24 Q. So it is 545 and 627 on the top?

25 A. Not from the numbers you read us from

1 page 6, that doesn't necessarily show that. Page 6,
2 the paragraph you just read, the last sentence of it,
3 shows 610 to be the median, 550 to be the lower and
4 625 to be the upper.

5 Q. But that's for the median forecast.

6 If you turn back to the prior page, the
7 whole bandwidth of the forecast from the upper to the
8 lower load forecast is from 627 at the top to 545 at
9 the bottom.

10 A. That's an issue that Mr. Snelson just
11 indicated a caution to you, and that is, it's not a
12 function of whether you can or cannot life extend the
13 units, it's more a function of whether you need or
14 don't need the units.

15 So it is a different factor altogether.
16 And mixing the two together under the heading of
17 uncertainty for life extension is mislabelling and
18 misunderstanding that data.

19 Q. Let's see what the authors say about
20 that, Mr. Shalaby, on page 6 and see if you agree with
21 them. In the next paragraph:

22 The high expected contribution from
23 existing capacity, relative to its
24 chronological age, reflects the economic
25 attractiveness of life extension programs

1 relative to other options and the
2 anticipated effectiveness of those
3 programs to improve the availability and
4 performance of specific power plants.

5 Would you agree with that?

6 A. I use words like Mr. Snelson said,
7 I read the words and they make sense, yes.

8 Q. Good.

9 On the other hand...the authors
10 continue...the existing generation base is vulnerable
11 to major environmental contingencies such
12 as stringent acid rain, CO(2) and nuclear
13 safety regulations. Such regulations
14 could result in the loss of otherwise
15 economical fossil and nuclear fuel
16 generation. A loss substantially greater
17 than the amount assumed for the expected
18 case. The contribution from existing
19 capacity is also sensitive to the
20 resolution of demand uncertainty
21 over time, et cetera.

22 Do you agree with all of that?

23 A. Yes.

24 Q. And if you would turn with me to page
25 7. In the paragraph before the heading at the bottom

1 of the page:

2 For the median load growth case
3 the estimated contribution from new
4 utility generation in 2010 ranges from a
5 high of 85 gigawatts to low of 65
6 gigawatts with an expected value of 80
7 gigawatts or about 2 gigawatts per year
8 beyond the current 1988, 1987 NERC
9 projection.

10 At this level, utilities will be
11 constructed about one fourth of the new
12 capacity needed in 2010, net of the
13 expected impact of the DSM and the 610
14 gigawatts expected from the existing
15 capacity. As the provider of last resort
16 under the franchised obligation to serve,
17 utilities would have to significantly
18 increase that contribution to cover a
19 shortfall from DSM, non-utility
20 generation or higher than expected
21 retirements. If the utilities are unable
22 to respond within their range of
23 flexibility, then electrical users will
24 bare the brunt of the shortfall.

25 Do you agree with that?

1 A. The words make sense, yes.

2 Q. Good. And then going on to the next
3 heading:

4 The expected contribution from
5 non-utility generators is the most
6 uncertain both from the downside risk
7 that the contracted supply will fail to
8 materialize, and in the potential for
9 independent producers to help supply
10 greater than expected demand for
11 electricity services.

12 Do you agree with that?

13 A. No. I think perhaps that is maybe
14 due to the vintage of that report. At that time,
15 perhaps the authors felt that way. We certainly don't
16 feel that strongly about the uncertainty in demand
17 management in 1992 in Ontario.

18 Q. But there is a range of uncertainty?

19 A. Yes, there is a range of uncertainty,
20 but saying that it is the most uncertain, I think we
21 probably will not agree with that.

22 MR. SNELSON: A. I think Mr. Shalaby
23 indicated something to do with demand management. I
24 think the question was with respect to non-utility
25 generation.

1 Q. It was non-utility generation that I
2 was talking about.

3 A. I think that was just probably a slip
4 of tongue.

5 Q. The authors were talking about
6 non-utility generation.

7 MR. SHALABY: A. Yes, my comments
8 applied to non-utility generation. The experience we
9 have seen here in Ontario indicates that non-utility
10 generation is reliable and it has a potential. I think
11 to label it as the most uncertain in the planning
12 horizon probably is -- I don't think we would do that
13 here on Ontario at this time, no.

14 Q. Which is more uncertain than
15 non-utility generation?

16 A. We don't have a weekly contest of who
17 is the most uncertain of the week or anything like
18 that. Basic demand is probably the most uncertain
19 variable that we deal with.

20 Q. Basic demand? More than non-utility
21 generation?

22 A. Yes.

23 Q. Turn to page 9, if you would, with
24 me. Near the bottom of the page. Second-to-last
25 paragraph:

1 For meeting the overall level of
2 future customer demand DSM's expected
3 contribution will be the net impact of
4 peak clipping, load shifting, strategic
5 conservation and strategic load growth
6 programs.

7 However, like other supply options the
8 actual impact of these programs is
9 uncertain.

10 Do you agree with that?

11 A. Yes.

12 Q. Page 12. In the second full
13 paragraph, starting in the fourth sentence:

14 DSM, whose effectiveness depends
15 largely on customer preference and
16 acceptance has a still greater range of
17 both upside and downside uncertainty.
18 Because they are subject to a host of
19 economic regulatory and competitive
20 influences, non-utility generators
21 exhibit both the greatest downside and
22 upside potential.

23 I guess your comment on that would be similar to what
24 you have already told me?

25 MR. SNELSON: A. I think you have to be

1 careful when you are asking us to agree with a sentence
2 that says greater range and greatest. Greater
3 certainly implies a comparison. So one should be clear
4 as to what one is comparing with.

5 Q. Yes. If you could then turn to in
6 effect the authors' conclusions on page 13. And we can
7 leave this with you at your leisure to review and if
8 you have any further comments. The second full
9 paragraph before the heading, in about the middle of
10 page:

11 The amount of resources needed to
12 achieve a supply/demand balance in 2010
13 is greater than the current median
14 forecast, but it is within the range of
15 possibility for increased utility and
16 non-utility construction, DSM, life
17 extension and imports.

18 However, utilities who are currently
19 ordering new capacity at an annual rate
20 of about 1.2 gigawatts would have to
21 start installing capacity at an annual
22 rate of about 12 gigawatts in 1992 to
23 provide the additional supply needed in
24 2010 at the median demand load growth
25 rate.

1 And I would suggest that that is a question of planning
2 a system that will meet that kind of uncertainty.
3 Would that be a fair statement?

4 A. Well, this is a statement about their
5 projections for the situation in the U.S. and I don't
6 think we know either enough about the particulars of
7 this study or of the plans that it is comparing with to
8 comment on that statement.

9 Q. No, but what the authors are saying
10 is if you go through the exercise set forth on figure 4
11 and analyzed in their paper, that if you are going to
12 plan for the uncertainties, you are going to have to
13 provide for something more than the median amount of
14 generation, or the median demand forecast. Having
15 regard to all of the ingredients and their uncertainty;
16 right?

17 A. That didn't seem to be what the
18 sentence that you read said.

19 Q. ...in order to achieve a
20 supply/demand balance is greater than the
21 current median forecast but is within the
22 range of possibilities for increased, et
23 cetera,

24 That in order to provide for the range of uncertainty
25 and the reasonable range of uncertainty, you have to

1 provide, Mr. Snelson, for something more than what is
2 shown by taking the median, that's fair; isn't it?

3 A. And in assessing planning around the
4 median approach, we have done that.

5 Q. But you are agreeing with my
6 proposition?

7 A. That you have to consider the effects
8 of what if the needs are higher or lower than the
9 median and take that into account in assessing whether
10 your plans are adequate?

11 Q. Yes.

12 A. Yes, we would agree with that.

13 Q. And you have to plan for that?

14 A. I am not sure of the distinction
15 between planning for it and taking it into account. If
16 you assess the flexibility you have, and you decide you
17 have adequate flexibility, then you may not have to put
18 specific things into your plans to provide that
19 flexibility.

20 Q. Is that called planning for it or not
21 planning for it?

22 A. Well, I am explaining, I think, what
23 we are doing. I don't know exactly what you mean by
24 planning for it or not planning for it.

25 Q. Perhaps that's a good time to take a

1 break, Mr. Chairman.

2 THE CHAIRMAN: Are you finished with 693?

3 MR. HEINTZMAN: I am finished with 693.

4 THE CHAIRMAN: We will take a 15-minute
5 break.

6 THE REGISTRAR: Please come to order. The
7 hearing will recess for 15 minutes.

8 ---Recess at 11:26 a.m.

9 ---On resuming at 11:48 a.m.

10 THE REGISTRAR: Please come to order.
11 This hearing is again in session. Please be seated.

12 THE CHAIRMAN: Mr. Heintzman.

13 MR. HEINTZMAN: Thank you, Mr. Chairman.

14 Q. Mr. Shalaby, reflecting on Exhibit
15 693 and the uncertainties that it attempts to analyze,
16 I would just like to reflect on what you said in Volume
17 60, when Mr. Rodger was putting the question of
18 uncertainties in demand management appearing from the
19 R.C.G. Hagler report to you.

20 THE CHAIRMAN: Do you have the page
21 number, Mr. Heintzman?

22 MR. HEINTZMAN: Page 10719 is the actual
23 quote starting on page 10718.

24 Q. At the bottom of the page Mr. Rodger
25 asked you a question at line 22:

1 "Well, going back to my initial
2 point that demand management targets are
3 seen as a certainty in the plan and yet
4 individual components of that, you
5 haven't looked at what happens if we are
6 wrong, what happens if we fall short in
7 this case in the EEI targets, and what is
8 the contingency plan in place in case you
9 do fall short. I guess my concern with
10 this answer is that you just haven't
11 analyzed that risk, and if that's the
12 right answer fine, I will leave it with
13 you."

14 And you answered --

15 THE CHAIRMAN: No, I'm sorry, I don't
16 think it's 'you', I think it was Mr. Burke that
17 answered. It looked like Mr. Burke.

18 MR. HEINTZMAN: Oh, I'm sorry. Yes, I
19 guess you are right. Yes, you are absolutely right,
20 Mr. Chairman. Sorry about that.

21 THE CHAIRMAN: You can just say Mr. Burke
22 answered.

23 MR. HEINTZMAN: Q. Mr. Burke answered
24 and maybe I can ask you about it, he said:

25 "I think what I am saying is there

1 are many risks and this is one of them,
2 and they are hopefully reflected in the
3 uncertainty band for the primary load
4 forecast which includes the supply
5 plan. The supply plan recognizes a
6 bandwidth of future requirements and this
7 is one of the many uncertainties
8 reflected in that."

9 And you said at the top --

10 MR. B. CAMPBELL: Sorry, for those who
11 might be trying to follow the hearing, the actual quote
12 is:

13 "...primary load forecast which underlies
14 the supply plan."

15 MR. HEINTZMAN: Q. "...underlies the
16 supply plan. The supply plan recognizes
17 a bandwidth of future requirements and
18 this is one of the uncertainties
19 reflected in that."

20 And then you, Mr. Shalaby, added one
21 point at the bottom of the page and on to the next page
22 and you said:

23 "Page 15-68 has a discussion about
24 flexibility and it really sums up what
25 Mr. Burke was saying. If you have a plan

1 that's flexible enough to respond to
2 upper load growth. It will be flexible
3 enough to respond to shortfalls in
4 demand management provided you don't get
5 hit with both upper load growth and low
6 yield in demand management."

7 Is that what you said.

8 MR. SHALABY: A. I said that probably
9 four or five times in this hearing so far and I have
10 page 15-68 opened right in front of me.

11 Q. Good.

12 A. This has got to be my favourite
13 passage on flexibility.

14 Q. What you were saying there was that
15 by having, as we then had, flexibility to meet the
16 upper load growth you would be able to meet the -- deal
17 with demand management shortfalls if they didn't meet
18 the targets; right?

19 A. Yes.

20 Q. And you continue by saying:

21 "What we are presenting to this
22 Board is a plan that has flexibility. If
23 we do have approvals and we have
24 engineering work under way and we have
25 options open to us to respond to upper

1 forecasts, we will have a package of
2 options ready to respond to many other
3 contingencies as well, such as delays
4 in NUGs or poor performance of our
5 existing units or a dry year that has low
6 water conditions, many, many other
7 contingencies that we have, including low
8 yield in demand management."

9 Right?

10 A. Yes.

11 Q. And that was one of the rationales
12 amongst many others that have been canvassed for
13 planning so as to include the upper load growth
14 forecast; right?

15 A. Yes.

16 Q. Now, I would like to turn to the
17 upper load growth forecast or upper case in the Update,
18 and I think it's dealt with in Exhibit 646 at
19 attachment D.

20 And I think you have told us, Mr. Shalaby
21 or Mr. Dalziel or Mr. Snelson, that no upper load
22 forecast was prepared prior to the publication of
23 Exhibit 452 in January, 1992?

24 A. No plan to meet the upper, no
25 detailed illustration.

1 Q. Yes.

2 A. The forecast itself was available but
3 an illustration of how to meet it exactly year-by-year
4 and by what option comes in what year, that
5 illustration was not available, you are quite right.

6 Q. Whereas in the DSP it was stated as a
7 fundamental premise that the plan should take into
8 consideration the upper load growth forecast; correct?

9 A. We indicated yes in the DSP that
10 meeting the upper is one of the objectives of the
11 integrated plan.

12 Q. So that the planners, the working
13 committee, the Board of Directors didn't have before
14 them when they made that consideration a detailed
15 analysis of the very case that the DSP indicated it was
16 essential to include within your planning parameters;
17 fair?

18 A. No. I think we started the day with
19 this very question and my answer continues to be the
20 same. They had in front of them information that shows
21 how far above the median the plan that we are
22 presenting to them in the Update can go.

23 They had in their possession indication
24 of how many more CTUs we can add, how much more NUGs
25 can be put on line, and that in essence is a statement

1 of: We can meet up to the upper for a long period of
2 time.

3 Q. Well, that's all contained in the DSP
4 itself?

5 A. And it's contained in Exhibit 452 as
6 well. Not detailed, in this year you will put that
7 many megawatts on the following site to do the
8 following duty, but what they have seen is enough
9 information that indicates that meeting the upper for a
10 long period of time from now is a possibility with the
11 response portfolio and the capability of existing
12 systems.

13 Q. Where is that in 452?

14 A. Let's go back to page 14 that we
15 started with again this morning. I would be
16 repetitive, I would not add any more to what I added
17 this morning, but if you would like me to go through it
18 again, then --

19 Q. No, I would just like to see where
20 you show meeting the upper on page 14.

21 A. It's not all in one place but people
22 can work things out from different sources of
23 information. Page 14 shows to what extent it can meet
24 the upper all the way to year 2000, for example.

25 Q. But it doesn't show it meeting the

1 upper?

2 A. We indicated in this testimony that
3 the upper is overstated in this graph and it's
4 overstated because when you look in 1992 on that graph
5 it shows the demand to be some 2-1/2 gigawatts above
6 the median.

7 Well, it isn't 2-1/2 gigawatts above
8 median, today it is median, it is 23 or so thousand
9 megawatts which is about 23 gigawatts.

10 So this line we know and we have told
11 people who read the Update to the load forecasts and
12 are familiar to the Update to the load forecasts and we
13 have told this Board for sure that this line is
14 overstated.

15 THE CHAIRMAN: Mr. Heintzman, is asking
16 what the Board had and what 452 -- did they know the
17 line was overstated at that time?

18 MR. SHALABY: I can only say that
19 somebody looking at 1992 and seeing that there are
20 three values for 1992 and there is only one value that
21 could be correct - I don't know the exact answer to
22 whether the Board was deliberately or, I mean,
23 specifically alerted that the upper is overstated, I
24 don't know the answer to that.

25 Unless it is in this document here, I

1 don't know the specific answer to that.

2 MR. HEINTZMAN: Q. Okay. Is there
3 any --

4 MR. SHALABY: A. But all I'm saying is
5 it doesn't take much to figure that out. You can look
6 in 1992 see a range of demand and a range is not
7 applicable to the past or to the present, a range is
8 more applicable to the future.

9 Q. All right. Anything else?

10 A. Well, here. So we see that we can
11 meet very close to the upper for a long period of time
12 and then the response --

13 Q. Well, I suppose if you rejig the
14 numbers you could, but there's no telling the reader of
15 that that the number in the year 2000 is going to be
16 different than it is; is there, than is shown on the
17 graph figure 7-1.

18 A. I think we indicated --

19 THE CHAIRMAN: Excuse me, I hate to
20 interrupt. All Mr. Shalaby is saying, I think, is the
21 graph shows that the available supply will meet most of
22 the possible requirements between the median and the
23 upper within the period shown.

24 That is one factor that the Board had
25 before them.

1 MR. SHALABY: Yes.

2 THE CHAIRMAN: Okay.

3 MR. HEINTZMAN: Q. Okay. Most but not
4 all.

5 MR. SHALABY: A. The most recent
6 exhibit, Exhibit 692 that Hydro put in, which is a
7 chronology or sort of what happened, I think it
8 indicates that the Board of Directors had a
9 presentation on the load forecast together with this
10 Update. Let me try and find that.

11 On page 3 of that exhibit, this is the
12 three to four pages that were given a number this
13 morning. On page 3 of that exhibit, the date December
14 9th, 1991, it reads:

15 "Update plans and results of
16 analyses as well as the update to the
17 1980 load forecast were presented to the
18 Ontario Hydro Board of Directors."

19 So there were two packages going to the
20 Board, one of them is Exhibit 452 or the information
21 similar to it, and the other one is the update to the
22 load forecast.

23 I'm assuming, I'm not basing this on
24 direct knowledge, but if there is a presentation on the
25 load forecast I would assume that the idea of -- we

1 just updated the load forecast and the upper being
2 overstated might be part of that presentation.

3 Q. And you can't tell me how much of the
4 upper forecast was shown as being satisfied by the line
5 on figure 7-1 in any particular year, 7-1 of Exhibit
6 452?

7 A. To my knowledge, no more than what's
8 shown in this figure, and this figure tells a lot.
9 This figure provides a lot of information.

10 Q. Yes. But it shows that the
11 forecasted available supply doesn't cover demand?

12 A. All right. You asked me what else
13 was presented and I was flipping to page 28 of Exhibit
14 452. Page 28 is headed The Response Portfolio and the
15 second paragraph says:

16 "About 2,500 megawatts of CTU
17 capacity could be installed on existing
18 fossil generation sites."

19 And further down at the end of that
20 paragraph it says:

21 "If sites such as Wesleyville and
22 Lennox B are included, installation of
23 additional CTUs could be increased by an
24 extra 3,000 megawatts but the lead time
25 required for these sites may be longer."

1 Longer than the four years referred to in
2 the 2,500 megawatts.

3 Q. But these are all the so-called
4 contingency plans for which no approval is being
5 sought; these are life preservers that are there if
6 necessary?

7 A. I wouldn't describe them as life
8 preservers, these are options available to top up the
9 capability that we showed in that figure 14 -- page 14.

10 Q. For which no approval was either
11 given by the Board or sought by this Board?

12 A. No approval is sought by this
13 Environmental Board, yes.

14 Q. Anything else?

15 A. The possibility of putting back
16 in-service the Keith and the Hearn is being drawn to
17 the Board's attention in this document.

18 Q. Well, all of this is inference you
19 are asking someone to read to try to figure out what
20 the upper load growth might entail in terms of supply?

21 A. Yes. And I think the response
22 portfolio says that we can meet the upper a long way
23 above the median, fairly close to the upper for a long
24 number of years to come, and if we needed more in the
25 longer term or to top it up there are options available

1 to do so.

2 Q. One of which is new major supply?

3 A. One of which is new major supply
4 absolutely.

5 Q. And that's what you then dealt with
6 and drew up a game plan for in Exhibit 646, Appendix D;
7 right?

8 A. Can you direct me to Exhibit 646,
9 Appendix D?

10 Q. Isn't this where you set forth the
11 upper load forecast and indeed the lower load forecast
12 plan?

13 A. This sort of puts the details on
14 paper, illustrates that a case that meets the exact
15 upper year-by-year into the planning period, yes.

16 Q. It's the only one we have that does
17 that?

18 A. It's the only one that does it
19 year-by-year all the way into the planning period in
20 detail, yes.

21 But I continue to say, there was enough
22 information on the table, convincing information that
23 we could meet demand considerably above the median,
24 almost all the way to the upper for a period of 10
25 years, and there's information on the table at the time

1 of approving the decision that there are options that
2 can fill the gap beyond that in time and in amount.

3 Q. Well, for any longer than 10 years
4 it's pretty hard to trace exactly what you would do in
5 any particular situation from Exhibit 452; isn't it?

6 A. No, I reject that. We showed 5,500
7 megawatts of combustion turbines in Exhibit 452, some
8 on existing sites, some on new sites. That was in
9 Exhibit 452.

10 Q. But it doesn't tell you what you are
11 going to do and which ones -- does it exactly jibe with
12 what you came up with in Exhibit 646?

13 A. It is consistent with it, yes.

14 Q. It's consistent. I see. Well, let's
15 go --

16 A. Well, I don't know what exactly jibe
17 means. Isn't that another word for consistent?

18 Q. Well, it means that one of your
19 options was major new supply, which is what this
20 document is.

21 A. Combustion turbine units are major
22 new supply.

23 Q. Yes, that's fine.

24 A. I don't label them anything
25 different.

1 Q. So you told the Board that one of
2 your options was major new supply and let's look at it.

3 A. Yes.

4 Q. This option is one that applies both
5 to your nuclear and your fossil game plan; right?

6 A. Yes.

7 Q. It is a mongrel plan that really
8 doesn't fit either of them, it's got a little bit of
9 thoughts from one and little bit of thoughts from the
10 other; isn't that fair?

11 A. Is that the illustrative plan to meet
12 the upper, or what is it you are referring to?

13 Q. This one, at page D-1 has both
14 nuclear generation, which doesn't quite fit the nuclear
15 median case, and fossil it's sort of a combination of
16 the two; isn't it?

17 A. Yes.

18 Q. Yes. And if we turn to page D-4, it
19 shows the nuclear starting again in the magic year of
20 2010.

21 MR. DALZIEL: A. Yes, it does.

22 Q. Yes. And as you said, Mr. Shalaby,
23 it provides for major new supply before that, and all
24 of that that we can see is fossil?

25 A. Yes.

1 Q. And did you run a case that had
2 nuclear providing that major new supply before 2010?

3 A. I don't recall one.

4 Q. And is there any reason why you
5 wouldn't have run a case that showed nuclear fulfilling
6 major new supply before 2010?

7 A. I think we were just setting out to
8 supplement some of the information that we had already
9 provided, and in looking at the number or what kind of
10 additional cases we might look at, the ones that have
11 been included in Exhibit 646 are the ones that we
12 focussed on.

13 Q. I know --

14 A. So we looked at a combination of
15 using IGCC and nuclear plant and combustion turbine
16 units to respond to an upper load forecast.

17 Q. But is there any reason that you
18 didn't use a nuclear facility to provide the major new
19 supply before 2010?

20 MR. SHALABY: A. The reason is that we
21 wanted to show, with the response portfolio that we
22 have at our disposal, how can we illustrate a way of
23 meeting upper demand.

24 Q. Yes.

25 A. So this was, if we get the approvals

1 we are asking for in front of this Board, Manitoba and
2 hydraulic.

3 Q. Yes.

4 A. And if we proceed with the demand
5 management and non-utility generation, and if we have a
6 response portfolio that has additional non-utility
7 generation or combustion turbines, and if nuclear and
8 ICGG are this far away, this is a way of responding to
9 the upper.

10 This was not a case of: Can we do it
11 differently. This is an illustration of, if we get
12 what we are asking for in front of this Board and if we
13 have at our disposal the response mechanisms that we
14 indicated, here is a way of meeting the upper.

15 Q. Well, I know that, but I want to know
16 why you didn't show a case that had nuclear supplying
17 some of the major new supply before 2010.

18 [12:10 p.m.]

19 A. Because in the response portfolio
20 that we have, we don't expect to be able to put nuclear
21 on line before 2010.

22 Q. Let's analyze that.

23 A. This is a case that says given this
24 response portfolio, given this set of approvals that we
25 are asking for in front of this board, here is a way of

1 meeting the up.

2 Q. Here is a way of meeting the up.

3 A. That is correct.

4 Q. But this case is built on Case 15,
5 right? In effect, it's the same philosophy as Case 15,
6 right?

7 A. I'll accept that for this argument.
8 I don't want to argue with you.

9 Q. And Case 15 does advance the nuclear
10 units from 2010 from the lower case, as it then was,
11 to 2002 or 2003, or whenever needed, under the median
12 and upper cases, right?

13 A. At that time we had requested
14 approvals that would enable us do put nuclear in 2002
15 or 2003. At this time we are not requesting these
16 approvals, and the purpose of this excise is to show
17 the adequacy of the approvals we are requesting and the
18 adequacy of the response portfolio that we have
19 prepared.

20 Q. But if it's based upon the philosophy
21 of Case 15, and Case 15 provides for earlier nuclear
22 generation in a major new supply need case, can you
23 give me any answer, and I haven't heard one yet, as to
24 why you didn't at least prepare a case showing nuclear
25 as coming on as major new supply before 2010?

1 A. I am puzzled why you don't feel I'm
2 giving you an answer. I'm giving you an answer that
3 says the purpose of this illustration is to show how
4 the response portfolio would work together with the
5 approval they were requesting to meet upper demand.

6 Now, the question could be a different
7 one is why didn't you before requesting the approvals
8 or deciding on what approvals to request work out a
9 case that has upper earlier met by nuclear. But that's
10 not what this is showing.

11 Q. You did have in this philosophy
12 nuclear coming on before 2010 in Case 15.

13 A. Yes.

14 Q. So all you are saying is we prepared
15 this case because we prepared this case. You are not
16 telling me why you didn't prepare one that had nuclear
17 coming on earlier than 2010.

18 THE CHAIRMAN: No, what he's saying is, I
19 sure hate to do this and maybe I'm wrong. But what I
20 understand, take him to be saying is they have this 452
21 plan and somebody says to them, well, how are you going
22 to make the upper forecast if that occurs? And they
23 then developed in attachment D of 646 how they would
24 propose to do so that if it became necessary to do it.
25 And it can't put nuclear into that, he said a few

1 moments ago, because nuclear can't come on line before
2 2010, I think that's what he said.

3 MR. SHALABY: Correct.

4 MR. HEINTZMAN: Q. Is that the reason
5 you can't get a nuclear station going by 2004, 2005,
6 2006? Is that what your answer is?

7 MR. SHALABY: A. Given the approvals we
8 are asking for, yes. The answer is we do not foresee
9 nuclear on line before 2010, given this set of
10 approvals that we are requesting.

11 Q. You can't even do these approvals,
12 you can't do anything because you haven't asked for
13 approval of major new supply. You can't even do the
14 fossil.

15 MR. B. CAMPBELL: Who said that? Where
16 is that in the evidence?

17 THE CHAIRMAN: Mr. Heintzman's point is
18 you can't get the CTUs without getting approvals for
19 them.

20 MR. SHALABY: I accept that.

21 MR. HEINTZMAN: Q. So you have got to
22 get approvals for whatever you are going to move
23 forward for.

24 A. Yes.

25 Q. All right. But it's physically

1 possible to, as we have seen in the life, if this Board
2 would give approval in 1994 for nuclear, it's
3 physically possible to get a CANDU 3 on in nine years,
4 nine and a quarter years. It would be 2003. It's
5 physically possible to have a CANDU 6 on in 10-1/4
6 years. That would be 2005.

7 A. Yes.

8 Q. So you could have provided for
9 nuclear generation earlier than 2010, right?

10 A. And what purpose would that serve to
11 be part of our statement of evidence?

12 Q. To show that under a nuclear case the
13 costs will be less to, that the SO(2) will be within
14 limits. That the CO(2) will be with limits. That
15 there won't be so much NOx emission, to give the Board
16 a choice as to what is the possible future generation
17 complexity of Ontario Hydro which Mr. Snelson has told
18 us is fundamental to even approving the approvals you
19 have asked for.

20 A. At the risk of being repetitive, I
21 think the purpose of appendix D is not to reopen the
22 decision our board of director approved.

23 Q. Which is what?

24 A. Which is, we will go for a set of
25 approvals in front of this environmental board for the

1 Manitoba Purchase transmission and the hydraulic
2 program, and we will not be seeking nuclear approvals
3 at this time.

4 Our board of directors approved that, and
5 they approved that with the knowledge that upper load
6 forecast, there are many options available to us to
7 meet higher than median load forecast and they had
8 information at the time to indicate what those options
9 are and to what extent they can meet, demand higher
10 than upper forecast, than median forecast.

11 But we are now coming after the fact,
12 well, for those who want to see details, play-by-play,
13 year-by-year, option-by-option, here it is.

14 Q. Here's one.

15 A. Here is one way of doing it.

16 Q. But if your board of directors had an
17 upper load forecast and it had a nuclear based -- they
18 didn't even have a fossil based or a nuclear based.

19 A. Yes.

20 Q. If they had had a nuclear based one
21 that showed them all of these differences, they would
22 have been able to make a choice between those two,
23 wouldn't they?

24 A. I think they made the choice. They
25 made the choice between the future that is based on the

1 proposals in Exhibit 452 and a future that is based on
2 other proposals from other exhibits, other experience
3 and other information available to them. They made the
4 choice not to approve requests for nuclear approvals at
5 this time.

6 Q. Well, I have already suggested as to
7 what the rationale is in this, but I'll ask the
8 question one more time. I haven't heard yet a reason
9 why you didn't present either to this Board or to the
10 board of directors an alternative to the upper load
11 growth which is fundamental, we have been told, to the
12 DSP, fundamental to good planning for at least
13 consideration, to say here is a plan that will do all
14 of these things for you, now you make the choice. But
15 you are telling us that no such plan was presented or
16 prepared.

17 A. No such plan was presented or
18 prepared in detail. A lot of those plans were prepared
19 in detail in other exhibits in previous planning
20 studies.

21 Q. But you didn't even prepare, not in
22 detail, a plan involving nuclear generation as the base
23 or the major new supply before 2010, did you?

24 A. No. I think it's not hard to figure
25 that some, and Ms. Howes indicated and these cases

1 indicate that some pollutants, some emissions, would be
2 lower if nuclear was available earlier under the upper.

3 Q. Yes.

4 A. But in the total judgment of our
5 board of directors and of our senior management and of
6 our planners, as a whole, under all circumstances, the
7 plan presented in Exhibit 452 strikes a balance. If
8 you had more options and if you worked on more options
9 just in case you need them under certain circumstances
10 they would do better in certain parameters. That was
11 not convincing enough to having more and more options
12 being prepared.

13 Q. It wasn't convincing enough because
14 none was prepared.

15 MR. SNELSON: A. If our board of
16 directors had wanted that information to make the
17 decisions, they would have asked for it.

18 Q. Well, I think that says exactly what
19 I have been wanting to say all along, Mr. Snelson.

20 Ms. Howes presented, Mr. Shalaby and Mr.
21 Snelson, some graphs in Exhibit 682 that show, I sort
22 of gathered, in interrurum fashion the kind of
23 emissions You are going to get from the upper load
24 forecast.

25 MR. B. CAMPBELL: I don't know if Ms.

1 Howes Latin is as good as mine, but you might want to
2 tell her what interrorum is all about.

3 MR. HEINTZMAN: Q. Well, if we look at
4 page 95 of Exhibit 682, for instance; there are many of
5 them, but I'm trying to find where they are start,
6 where these uppers start. I guess they start on page
7 87.

8 MS. HOWES: A. Yes, they do.

9 Q. And we see the upper total SO(2)
10 production up above the, it looks like the approvals
11 line or the control line; is that right?

12 A. Are you on page 88?

13 Q. 88, yes.

14 A. Yes.

15 Q. And again on page 89, above the
16 approvals line, page 90 way above the approvals line.

17 A. On 89 it's above the approvals line
18 in 2010.

19 Q. Yes. And then it comes down a little
20 bit and comes back up above the approvals line on 2017.

21 A. On page 90?

22 Q. Page 89.

23 A. Page 89, yes.

24 Q. And on page 90, the upper case is way
25 up in the stratosphere.

1 A. Recognizing that these are potential
2 limits and possible regulatory limits and illustrative
3 targets, yes, for this case it is certainly above the
4 line.

5 Q. Yes. And if you had run the upper
6 case with a nuclear based generation, such as a Case 22
7 or Case 23 and, furthermore, if you then enhance that
8 case, I take it that those lines would have been way
9 down at least as low as some of the update nuclear
10 lines.

11 A. They certainly would have been lower.
12 And you are assuming exclusively nuclear as a base load
13 for the upper case as opposed to a mix of fossil and
14 nuclear?

15 Q. Well, I am just doing it as a trend
16 basis, because you and I got into this before. As a
17 trend, the numbers are going to be down on all of these
18 pages, 88, 89, 90, 91, 92 if you have an Update case
19 based on nuclear, right?

20 A. Yes, they certainly would be lower

21 Q. And then they would be lower still if
22 the enhancement was applied on whatever fossil
23 generation was in the existing system or your new
24 system.

25 A. This is your enhanced nuclear case?

1 Q. Yes.

2 A Yes. I would like to suggest, too,
3 that perhaps there are other graphs that illustrate if
4 we had gone with an upper solely nuclear, there
5 probably would have been higher radioactive wastes and
6 probably radionuclides, just for completeness.

7 Q. Yes, no question about it. But you
8 didn't prepare any charts of that.

9 A. Of?

10 Q. The update nuclear to show those
11 kinds of wastes.

12 A. Yes. Those are in 452. In the
13 overhead package I just looked at the similar graphs.
14 So those charts that you are referring to are available
15 in the 452. I don't remember whether it's E or G. I
16 think it's G.

17 Q. So that's for the so-called nuclear
18 case and the fossil case and the enhanced case.

19 A. Yes. And they are also available for
20 the upper.

21 Q. Yes. Where is that?

22 A. It's in 452G.

23 Q. 452, sorry?

24 A. 452G, as in George.

25 Q. I see. 452G. That's a separate

1 exhibit.

2 A. Yes.

3 Q. Well, I don't think we need to turn
4 to it. When was that prepared?

5 A. I think the date on it is April.

6 Q. 1992.

7 A. Yes.

8 THE CHAIRMAN: But these graphs have
9 found their way into 682, some of them.

10 MR. HEINTZMAN: Q. Aren't the same
11 graphs in the two exhibits?

12 MS. HOWES: A. Yes, yes.

13 Q. So, in this case, this upper case,
14 about 75 per cent, if I can figure this out correctly,
15 of the new generation is fossil.

16 A. Are we still referring to the upper?

17 Q. The upper, yes.

18 A. If we turn to page D1-3. Of the
19 21,009 megawatts installed by January, 2017, in the
20 chart on page D1-3 of Exhibit 646, 5,360 megawatts are
21 CANDU 6 and 15,649 megawatts are either CTUs
22 or IGCCs, correct?

23 MR. DALZIEL: A. Yes, that's right.

24 Q. And this is quite an extraordinary
25 thing because you have actually rolled out, it's the

1 only case that I can find where you have actually
2 rolled out a particular technology downwards. The
3 CANDU 6 is now 5,360, which I think you tell us is
4 eight units, whereas under the median case nuclear,
5 so-called, it was 6,048.

6 A. It should have been 6,030, but your
7 point is right.

8 [12:25 p.m.]

9 Q. Yes. Do we see that anywhere in the
10 DSP or elsewhere that you roll back a unit out of
11 nuclear in moving from median to high case?

12 A. No.

13 Q. So, if we look at that page B1-3 and
14 if we want the Board to know how much generation you
15 have to have in the year 2017 to meet the upper case,
16 you have to have 21,000 megawatts, approximately?

17 A. That's right.

18 Q. So unlike the DSP where it was around
19 17- or 18,000 as your upper load forecast, now if we
20 are going to plan around the median by being ready for
21 the upper, we are talking 21,000 megawatts in 2017?

22 A. Out at the end of the plan period.

23 Q. Yes.

24 A. Yes.

25 Q. So, Mr. Dalziel, just talking with

1 you about this point. If the Board is satisfied that
2 there is a rationale for major new supply - just assume
3 that with me for the moment - and assume for me also
4 that it is satisfied with the rationale of CANDU
5 technology, and you will agree with me that in the DSPS
6 Ontario Hydro sets forth the rationale for CANDU
7 technology, paragraph 5.8 of the DSPS on page A-6 of
8 Exhibit 3:

9 Ontario Hydro will seek to
10 maintain CANDU nuclear so it is available
11 for future development.

12 A. Yes.

13 Q. And you are aware that in Panel 9
14 Hydro's experts supported the rationale - leaving aside
15 the need - the rationale for CANDU technology; right?

16 A. I believe they did that.

17 Q. Yes. So that if the Board is
18 satisfied that there is a need and it is satisfied that
19 there is a rationale for the CANDU technology and it is
20 satisfied that there is a rationale for planning to the
21 upper and is not satisfied with the rationale for
22 planning to or around the median, then I suggest to you
23 that the necessary consequence would be that this Board
24 would establish a condition that - and I just want to
25 put this as a planning perspective to you - that the

1 natural result from a planning perspective is that you
2 should state that there is a requirement or rationale
3 for 21,000 megawatts by the year 2017 if you are
4 satisfied with those criteria as a planning matter.

5 MR. SNELSON: A. There were a tremendous
6 number of conditions there.

7 MR. B. CAMPBELL: Are we getting out of
8 this question now this whole conversation of putting on
9 a term and condition and so on?

10 THE CHAIRMAN: Well, he got that out of
11 the question. He saw your objection coming and he
12 moved that out of question. So I think it can still be
13 answered the way it was framed.

14 MR. HEINTZMAN: Q. Dealing with it as a
15 planning matter, if you are satisfied that there's a
16 need and rationale for major new supply, and you are
17 satisfied, let's say, that arise out of the need to
18 plan to the upper or whatever other criteria you apply,
19 and you are satisfied with the rationale of CANDU
20 technology, then I suggest to you, as a planner, what
21 you would do is you would plan for 21,000 megawatts by
22 the year 2017.

23 MR. SNELSON: A. 21,000 megawatts of
24 what?

25 Q. Of new generation, just as we saw on

1 that page, page B1-3.

2 A. I have difficulty with the question
3 because I am not sure what you mean by planning for.

4 Q. You would provide for an express plan
5 for 21,000 megawatts as the DSP provided for the amount
6 set forth in that document?

7 A. 2017 is a long way away and one of
8 the principles of planning is, while looking forward
9 and keeping one's eyes on a range of possible futures,
10 is to avoid making decisions until decisions have to be
11 made.

12 And so we are talking here, you are
13 focussing on 2017 and there isn't very much that we
14 have to decide today specifically about 2017.

15 Q. Well, all right. 2014, whatever the
16 number would be, sorry, 2009, whatever the number would
17 be, I haven't -- or 2014, it's not that much off
18 21,000; is it?

19 A. I would imagine that as you work back
20 from 2017 in this scenario that number will get to be a
21 lot less than 21,000.

22 Q. I have been looking for it as to
23 2014. Can you give me the number that it should be?

24 THE CHAIRMAN: It seems to me this is a
25 very simple question. Would you confirm the validity

1 of the table shown on 2.5, given the assumptions that
2 new major supply is required, CANDU technology is
3 satisfactory, and you are planning the upper.

4 MR. SNELSON: Sorry, the table --

5 MR. HEINTZMAN: Q. B1-3 substituting --
6 if you are going to use CANDU technology?

7 MR. SNELSON: A. Yes?

8 Q. If you are going to plan to the upper
9 and you are satisfied that there's a need and rationale
10 to do so, and you are satisfied that there's a present
11 need to do so; that is, a present plan and a need to
12 plan to do so, I take it as a planning matter you would
13 then plan for 21,000 megawatts by 2017?

14 A. Given all those provisos, yes, but I
15 think it's inconceivable that there would be a present
16 need to plan for exactly what you are going to do in
17 2017.

18 Q. Well, your problem, sir, is with the
19 present need to plan for new generation.

20 A. I'm having my difficulty getting
21 around the practicality. I can see the hypothetical
22 question. If you think nuclear is the right sort of
23 capacity to have and you need to have capacity now,
24 then there are certain things that follow from that.

25 Q. Yes.

1 A. I can see the hypothetical question,
2 but I don't see the relevance of that hypothetical
3 question to 2017 because I can't see why you have to
4 make a planning decision now for what you will have in
5 2017.

6 Now, you have agreed that it can be
7 backed up in time, so if you were to accept there was a
8 need today for major supply approvals, and if you were
9 to accept and so on, then there might be a need for
10 some particular amount, but this is way out of line.

11 Q. Well, for 2009, do you know what the
12 number that is generated for 2009 is and 2014, maybe
13 you can help me?

14 A. I would expect to be able to find it
15 from the table on page D1-4.

16 Q. D1-6, wouldn't it be?

17 A. D1-4 I think is the load capacity.

18 Q. Well, if you turn to D1-6 and you
19 look at the columns entitled New Nuclear Supply and New
20 Fossil Supply.

21 A. Yes.

22 Q. Do you see those two columns?

23 A. Yes.

24 Q. There is nothing under nuclear, so
25 the new fossil supply is 20.4 terawatthours?

1 A. This is in energy terms.

2 Q. Yes, well let's use it for the
3 moment. If you are satisfied today with the rationale
4 of planning to the upper, and you are satisfied on the
5 need to plan for new supply, then as a planner you
6 would provide in 2009 for 20.4 terawatthours of major
7 new supply?

8 A. With those hypotheticals I believe,
9 yes.

10 Q. Yes. And for 2014 it would be 24.3
11 plus 39.9 which is 64.2 terawatthours.

12 A. Well, this is getting out into the
13 period when we wouldn't require approvals today.

14 Q. Well, maybe not, sir, but if you were
15 satisfied as to the need to plan for that, then that is
16 the amount that you would be planning for in terms of
17 major new supply, 64.2 terawatthours?

18 A. That's if the high load forecast was
19 to come about and you would have forecast for demand
20 management and non-utility generation, that's the
21 amount of new supply you would need.

22 Q. Yes. And if you were satisfied that
23 there was a rationale for the CANDU technology, then
24 you would include that as a component of that new
25 generation; wouldn't you?

1 A. Which is that generation? Are we
2 talking about --

3 Q. CANDU technology.

4 A. And what does that generation refer
5 to?

6 Q. The new generation that's going to
7 produce the 64.2 terawatthours in 2014 or 20.4
8 terawatthours in 2009; correct?

9 A. If you were satisfied that you wanted
10 to have nuclear capacity to meet to provide that then,
11 yes, nuclear would be part of it.

12 Q. Yes. Now, I want to show you the way
13 that -- and we can convert that to megawatts by looking
14 at page D1-4, I take it, by adding up the various
15 generating stations there.

16 Although they are only expressed in
17 fossil, that's the net result.

18 A. That is correct, but the best plan
19 would not have all of it in nuclear.

20 Q. The best plan would not have all of
21 it in nuclear, right. Now, I just want to show you how
22 you allowed for this I believe in another application
23 before to the Board -- or, sorry, in a paper which
24 describes your applications to the Board.

25 MR. SHALABY: A. Before we leave that

1 subject, I think it was during this cross-examination
2 of this panel we read passages that said we do not plan
3 just to meet the upper, we do not plan just to meet the
4 median, we do not plan just to meet the lower load
5 forecast.

6 I'm perceiving the discussion we have had
7 over the last 10 or 15 minutes to be if we knew for
8 sure that the upper is coming around; would you do the
9 following things.

10 Q. No, but I was putting --

11 A. The question becomes very different
12 if we didn't know for sure that the upper is coming
13 around, what do you do.

14 Q. No, but I said to plan to include the
15 upper, to include the upper as the DSP does, as Exhibit
16 3 does, then you would do just exactly as we discussed;
17 wouldn't you, because that will include the median and
18 the lower as a contingency; right?

19 A. I am perceiving the questions and
20 answers to be, if you knew for sure that the upper load
21 forecast is coming --

22 Q. I don't think you have to worry about
23 Mr. Snelson and me talking about the upper being
24 written in stone, Mr. Shalaby. I don't think anybody
25 suggested the upper is written --

1 A. Once you assign a small probability
2 of that upper coming around, your actions would be
3 different. That's all I'm saying.

4 THE CHAIRMAN: I thought the question was
5 premised on the basis that Hydro was back in its former
6 posture of planning to the upper. That was the
7 assumption.

8 MR. SHALABY: I'll leave it here.

9 MR. HEINTZMAN: Now, may we give this
10 document entitled: Environmental Requirements
11 subsection, Thermal Nuclear -- sorry, the title I guess
12 is Ontario Hydro's Experience with Environmental
13 Approvals.

14 THE REGISTRAR: 694.

15 ---EXHIBIT NO. 694: Document entitled: Ontario
16 Hydro's Experience with Environmental
17 Approvals.

18 MR. HEINTZMAN: 694.

19 Q. And this document describes; does it
20 not - and whichever member of the panel is most
21 familiar with it can confirm - the approach Hydro took
22 on seeking approvals for its flue gas desulphurization
23 program?

24 MS. HOWES: A. Yes, it was one of the
25 examples.

 Q. Yes. And Mr. W.M. Patterson, one of

1 the co-authors of this document, was to be one of the
2 members of this panel previously; was he not?

3 A. I think he was one potential witness,
4 yes.

5 Q. Yes. And would you turn with me to
6 page 6 under the heading Case Study, Hydro's FGD
7 Program, and I want to read the first three paragraphs
8 to you:

9 Hydro's experience in obtaining
10 approvals for its flue gas
11 desulphurization (FGD) program provides
12 some interesting perspectives on the
13 flexibility and problems inherent in the
14 environmental approvals process in
15 Ontario.

16 Major changes to existing generation
17 stations such as retrofitting FGD
18 equipment (or scrubbers) require Ontario
19 Government approval under the
20 Environmental Assessment Act (EA Act) as
21 well as several other environmental
22 statutes covering the specific design,
23 construction and operation details (e.g.,
24 EP Act).

25 In initiating the FGD program

1 Ontario Hydro's system planners were not
2 sure when these scrubbers might be
3 needed, what type of technology was best
4 or where they would be installed, they
5 wanted flexibility to install scrubbers
6 as required at a number of station
7 locations using one or more technologies.

8 The intent of the FGD program was
9 to have FGD approved and available as
10 one of the corporation's acid gas control
11 options by the mid-1990s. This would
12 improve Hydro's planning flexibility and
13 allow its coal stations to be used
14 effectively during this critical period."

15 That was the thrust and rationale of the
16 application to this Board in respect of that program;
17 was it not?

18 A. To this Board?

19 Q. Yes, to get approvals from the
20 Ontario -- or to the Ontario Government. I believe it
21 was to this Board.

22 MR. B. CAMPBELL: There was no
23 application to this Board.

24 THE CHAIRMAN: Not this panel.

25 MR. HEINTZMAN: Not this panel, no, no,

1 no.

2 Q. The environmental assessment process,
3 that is a description of what Ontario Hydro did and its
4 approach?

5 MR. SNELSON: A. Our recollection is a
6 bit hazy here of the precise details of this process,
7 but our understanding is that this particular
8 environmental assessment was approved without a
9 hearing.

10 Q. Yes.

11 A. And the question that we are a little
12 uncertain about is whether that was by the Minister
13 or -- by the Minister of the Environment or whether
14 there was some reference to the Environmental
15 Assessment Board and we are not quite clear on that.

16 Q. But the process and the desired
17 flexibility between various types of technologies when
18 Ontario Hydro was not then sure as to which technology
19 it wished to select is appropriately described; is it
20 not?

21 A. This program was intended to provide
22 flexibility on where and when certain controls could be
23 added to existing facilities.

24 Q. And what, as between various kinds of
25 technologies?

1 A. There were I believe three
2 technologies that were considered.

3 Q. Yes. And look at the bottom of page
4 6:

5 To maintain Hydro's desired
6 flexibility and still obtain the required
7 review and approval under the EA Act, it
8 was decided that Hydro would develop a
9 two-tiered approach to seeking approval
10 for its FGD program (figure 5) the first
11 phase seeking general approval for a
12 20-year FGD program and the second phase
13 dealing with site-specific FGD
14 installations and requiring preparation
15 and filing of a project implementation
16 report.

17 [12:45 p.m.]

18 The next paragraph:

19 In the first phase approval would be
20 sought for a program of activities
21 related to the installation of scrubbers
22 using one or more of four different FGD
23 technologies on up to 20 units at three
24 of our largest coal stations over a
25 20-year period. The information provided

1 in the FGD EA was general in nature and
2 citing details were only discussed
3 briefly. The intent of the first phase
4 was to demonstrate that the technologies
5 selected were environmentally acceptable
6 and that any secondary impacts, e.g.
7 waste management, could be mitigated
8 effectively.

9 So, comparing this situation to the DSP, the original
10 DSP, in the original DSP, Mr. Snelson, Hydro was
11 satisfied which was the best way to go, had three
12 preferred ways and out of those one preferred way to
13 go; right?

14 A. Hydro put forward three plans that
15 were considered to be acceptable.

16 Q. Of which one was its preference?

17 A. One was preferred, right.

18 Q. The present situation is much more
19 akin to the FGD program where you now say that Hydro or
20 you were unable to make up your mind between two or
21 three technologies, is that it?

22 A. The FGD program seems to me to be a
23 very different sort of undertaking.

24 THE CHAIRMAN: Please, please, please.

25 Mr. Heintzman is asking you generally about relation to

1 Plan 15, not about the FGD at this point.

2 MR. HEINTZMAN: Q. The present situation
3 is that you say you are unable to make up your mind
4 between various technologies, isn't that the position?

5 MR. SNELSON: A. We are certainly in the
6 position where we don't have a stated preference for
7 nuclear or fossil for base load options.

8 Q. And that was, I suggest to you,
9 exactly the same situation as faced the FGD program
10 where Hydro had four technologies which it was
11 considering, and that did not dissuade it or impede it
12 from seeking environmental assessment approval.

13 A. In that particular case, no, that did
14 not.

15 Q. And, in fact, it provided Hydro with
16 the flexibility to adopt one of those technologies when
17 and as it was appropriate to do so.

18 A. Subject to the preparation and filing
19 of the project implementation report. And I believe
20 that there are opportunities for review of that if it
21 turns out to be controversial.

22 Q. Yes. And the authors of this report
23 conclude on page 8 by saying in the first full
24 paragraph:

25 In summary, the FGD experience has

1 provided some interesting opportunities
2 to test and expand the flexibility of the
3 environmental approvals process in
4 Ontario.

5 That would seem to be a fair statement, would it not?

6 A. I would like to indicate how that
7 sentence continues, or that paragraph continues.

8 Q. Yes.

9 A. It is hoped that the precedents set
10 here can be refined and built upon to
11 achieve expeditious approvals for similar
12 undertakings. For example, a NOx control
13 plan in the future.

14 And I think that the authors are, in
15 making that first sentence that you read, referring to
16 similar sorts of undertakings. And the example they
17 use is of NOx control on existing plant.

18 Q. Well, look down to all of the lessons
19 learned under the summary. First one:

20 Environmental approvals are on the
21 critical path for more projects.

22 Adequate lead time must be allowed in
23 project scheduling to obtain the required
24 approvals. For major projects in
25 Ontario, this lead time is about six

1 years; five years for EA studies
2 approvals and one year for construction
3 and operation licenses, et cetera.

4 That's a true statement?

5 A. Generally, yes.

6 Q. Two:

7 Frank and open dialogue with
8 regulators in the public throughout the
9 approvals process is necessary to
10 facilitate timely approvals.

11 Do you agree with that?

12 A. Yes.

13 Q. And number four:

14 It is important to be broad and
15 forward thinking in seeking approvals.
16 Addressing a broader scope of activities
17 initially can pay dividends later.

18 Do you agree with that?

19 A. Yes.

20 Q. All of those principles apply to the
21 present circumstances, don't they?

22 A. And we have followed through on them,
23 yes.

24 Q. You raised one point in this regard,
25 Mr. Snelson, that I quite frankly, found fascinating.

1 You suggested that if this Board were to give approval
2 for major new supply, and I think it was Mr. Rodger who
3 said to you, you know, what's your problem with having
4 an approval of major new supply, and you said, oh,
5 well, when we go for site-specific approval, let's say
6 hydraulic, then it will confuse everyone and they will
7 say, well, why don't you go and do major new supply?
8 Is that what you suggested and were you serious?

9 A. Not in precisely those terms. But
10 the point was that if one was to have a very broad
11 range of approvals from this proceeding, one range that
12 clearly exceeded the amount that Ontario Hydro
13 required, then when you go to a subsequent process,
14 then the question might very well be a good question at
15 that time, so you have twice as many approvals as you
16 need, why go with this option rather than some other
17 option. And the issues we are deciding here may not
18 have been decided.

19 Q. Well, I suggest to you, sir, that
20 that is just absolutely incorrect. But let's just
21 canvas that for a moment. I suppose, then, that the
22 fact that Hydro is asking for approval of hydraulic
23 will be very confused because people will say you have
24 got approval for Manitoba.

25 A. No.

1 Q. Why not?

2 A. Because we show in most circumstances
3 that we need and will use both those approvals.

4 Q. Why isn't it open for someone to say
5 on your hydraulic site specific use Manitoba, on your
6 logic?

7 A. Because we need both.

8 Q. I see. Well, I suggest to you, sir,
9 that in each of your site-specific hearings you are
10 telling people that the choices between, let's say, the
11 station in Niagara, the need and rationale for it is
12 being settled right here as between all other options.
13 And if you don't have it decided here, you will have
14 misled the people at those hearings or will have to go
15 through a need and rationale exercise in all of those
16 site-specific hearings like the one you are having down
17 at Niagara.

18 MR. B. CAMPBELL: Well, we are, Mr.
19 Chairman, getting into areas that have been subject to
20 a great deal of argument in terms of the motions that
21 have been brought before you. It is Ontario Hydro's
22 position that the approvals that are being sought here
23 will all be proceeded with and that the questions that
24 remain in that circumstance are simply locational
25 issues which do not take us back into these issues.

1 We have been over this in legal argument.

2 I think if there's been one point that has been argued
3 longer than this one, I would be surprised to know what
4 it is. I think on this point our position is quite
5 clear and it is a matter of how the approvals are
6 carried forward as a matter of law.

7 THE CHAIRMAN: Isn't Mr. Heintzman
8 correct that Mr. Snelson in replying to Mr. Rogers did
9 say that asking for excessive approvals at this stage
10 might impinge on the site specific hearings?

11 MR. B. CAMPBELL: I don't argue with
12 that. My objection is simply to the last question.

13 THE CHAIRMAN: So Mr. Heintzman can
14 explore that contention with Mr. Snelson.

15 MR. B. CAMPBELL: I didn't object to
16 that, Mr. Chairman.

17 MR. HEINTZMAN: I wonder if we could hand
18 to the Board and to the panel part of your Niagara
19 River Hydroelectric Development Environmental
20 Assessment, dated March, 1991.

21 THE CHAIRMAN: Next exhibit.

22 THE REGISTRAR: 695, Mr. Chairman.

23 ---EXHIBIT NO. 695: Niagara River Hydroelectric
24 Development Environmental Assessment
Report dated March, 1991.

25 MR. HEINTZMAN: Q. I am referring you to

1 paragraph 4.1 of Exhibit 695, where after the heading
2 Activities to the Undertaking, the authors continue:

3 With respect to the first or primary
4 purpose, alternatives to the undertaking
5 are being addressed within the
6 Demand/Supply Plan, DSP review and
7 approval process. The DSP seeks approval
8 for a program of activities including the
9 rationale and alternatives to several
10 hydraulic generating facilities, one of
11 which is the Niagara River hydroelectric
12 development.

13 Consequently, this EA does not contain
14 information on alternatives to the
15 undertaking with respect to the first
16 purpose above.

17 Which is, develop additional hydraulic generating
18 capacity. Now, I suggest to you, and this was written
19 in March, 1991, that what you were trying to obviate
20 was a discussion of hydraulic versus nuclear or
21 hydraulic versus fossil or hydraulic verse whatever
22 else; were you not?

23 MR. SNELSON: A. Clearly, this document
24 envisaged relying upon the approval of this Board.

25 Q. Which involves making a choice, a

1 choice between alternatives, which would include those
2 which someone might throw up at the site-specific
3 hearing, such as the ones I have mentioned.

4 A. That is correct, as regards to this
5 environmental submission, yes.

6 Q. Yes. And in regard to all of the
7 environmental submissions that will be made for the
8 next "X" number of years in reliance upon the decision
9 of this Board and the process that this Board is going
10 through.

11 A. That is correct. We relied upon it.
12 But my point, coming back to the previous one, is that
13 because we do not address an issue in our environmental
14 assessment does not necessarily preclude that from
15 becoming an issue in that hearing.

16 Q. In which hearing, the site-specific
17 hearing?

18 A. Yes.

19 Q. So you are saying that people get
20 into the need and rationale for that project in that
21 hearing?

22 A. As a practical matter, for instance
23 in this proceeding there are matters that are raised by
24 intervenors that are not part of Ontario Hydro's
25 submissions.

1 Q. Well, coming back to the central
2 point, I suggest two things are correct. If this Board
3 clearly and categorically states the need and rationale
4 for "X", whether it be the hydraulic or the Manitoba or
5 nuclear generation or whatever, it is not going to be
6 confusing to another site specific hearing as to what
7 has been approved. Is that not self-evident?

8 A. Ms. Howes is just pointing out a
9 point that I was aware of, which is that the degree to
10 which this Board's ruling would affect and constrain
11 the Niagara hearing has already been changed because of
12 the change in the nature of the approvals requested for
13 the hydraulic program from site-specific approvals to
14 approvals of a range.

15 Q. Well, be that as it may, and leaving
16 aside the range of application of this Board's
17 decision, I suggest to you that if this Board clearly
18 and categorically approves the need and rationale of
19 "X", be it hydraulic, be it the Manitoba Purchase, be
20 it nuclear generation, that is not going to be a matter
21 which is going to be of debate, and that's Ontario
22 Hydro's request, at site-specific hearing.

23 A. If the approval was to be ironclad,
24 then that would be the case as a matter of law, and it
25 would also require -- well, I'm not sure as a matter of

1 law, but I'm just kind of speculating that. But if it
2 was to be a very clear decision, then that would be
3 stronger in keeping these matters out of the subsequent
4 process.

5 Q. And secondly, sir, it's not a
6 question of there being excess capacity. It's a
7 question of the environmental process containing within
8 it those choices. So that, sure, your choices may be
9 higher than "X" number of megawatts if you add them all
10 up, but the choices have to be on the table in order
11 for the process to work, don't they?

12 A. There is a very wide range of choices
13 on the table at this hearing.

14 Q. Well, sir, you conceded with me that
15 the update has tried to take some of those choices off
16 the table.

17 MR. B. CAMPBELL: Mr. Chairman, as a
18 matter of law, that is absolutely not correct. We have
19 never taken the position -- in fact, we have taken the
20 absolute opposite position. We have taken the position
21 that the options, the various options remain on the
22 table before you. We have made, as we feel obliged to
23 do, a recommendation as to what we -- it should be
24 approved.

25 Simply because something is not part of a

1 recommendation for approval, neither as a matter of law
2 under the Environmental Assessment Act or as a matter
3 of fact in Ontario Hydro's position means that it is
4 off the table. It is not.

5 MR. HEINTZMAN: Well, I'm grateful for
6 Mr. Campbell reiterating that.

7 Q. The clearer choices before the Board
8 and the more forthrightly they are stated and set forth
9 before the Board, the better the choice that can be
10 made? Would you agree with that, Mr. Snelson?

11 MR. SNELSON: A. As a matter of
12 principle, I think yes.

13 MR. HEINTZMAN: Can we stop there for
14 lunch, Mr. Chairman?

15 THE CHAIRMAN: Yes. 2:30.

16 THE REGISTRAR: Please come to order.
17 This hearing will adjourn until 2:30.

18 ---Luncheon recess at 1:03 p.m.

19 ---On resuming at 2:35 p.m.

20 THE REGISTRAR: Please come to order.
21 This hearing is again in session. Be seated, please.

22 THE CHAIRMAN: Mr. Heintzman.

23 MR. HEINTZMAN: Thank you, Mr. Chairman.
24 I wonder if I can hand to the panel and to the Board,
25 or the panel should have it, a paper entitled: Demand

1 Side Management, The Winds of Change.

2 THE REGISTRAR: 696 Mr. Chairman.

3 THE CHAIRMAN: Thank you.

4 ---EXHIBIT NO. 696: Paper entitled: Demand Side
5 Management, The Winds of Change.

6 MR. HEINTZMAN: Q. This was a paper
7 produced at the Proceedings of the Canadian Electrical
8 Association National Demand Side Management Conference
9 in Toronto in October of 1990, and amongst the
10 presenters was John H. Chamberlin of Barakat &
11 Chamberlin.

12 Are members of the panel familiar with
13 this paper?

14 MR. SHALABY: A. Not with this
15 particular paper, but familiar with some of the
16 authors.

17 Q. You are familiar with Mr. Chamberlin?

18 A. Yes.

19 Q. And Barakat & Chamberlin was one of
20 the consultants to Ontario Hydro with respect to demand
21 management?

22 A. Yes.

23 Q. And did any of the members of the
24 panel attend this conference on demand side management
25 in October, 1990?

1 A. No.

2 Q. Mr. Shalaby, I would ask you to turn
3 to page 25 of this paper. Page 25 under the heading
4 Market Penetration, and after dealing in the first
5 paragraph with the survey:

6 "...of 200 commercial and industrial
7 programs found that these programs have
8 reached 70 per cent or more of
9 eligible customers. Future penetration
10 will be difficult and increasingly
11 expensive."

12 The authors continue:

13 "Too much success, however, is not
14 the situation faced by most programs.
15 The Nadel survey found that "typical"
16 C&LM programs are reaching less than 5
17 per cent of eligible C&I customers...
18 are reducing energy use among
19 participating customers by less than 10
20 per cent, and are reducing utility peak
21 demand by less than 1 per cent."

22 Do you agree or disagree with those
23 statistics, or do you have any information to the
24 contrary?

25 A. Without, you know, jumping into page

1 25 of an article I find that I can't sort of comment on
2 what they are saying there. They are saying typical
3 and I don't know what typical means, and...

4 Q. Well, I am having difficulty
5 understanding the success rates that Ontario Hydro has
6 suggested would come out of demand management and I'm
7 not aware of any statistics that would support the
8 success rate as opposed to the penetration rate.

9 You can get a lot of people to
10 participate, but the question is how much energy do you
11 really save and how much capacity do you really render
12 unnecessary.

13 And this article prepared by your
14 consultant or in consultation with one of your
15 consultants suggests that you are going to get rates of
16 actual energy saving of less than 10 per cent.

17 THE CHAIRMAN: Well, just to be accurate,
18 it's not these authors are saying that. I haven't read
19 the thing either, but it's a quotation from the survey
20 conducted by Mr. Nadel.

21 MR. HEINTZMAN: Quite so, Mr. Chairman.
22 That's a better way of stating it.

23 MR. SHALABY: If we carry on as well
24 maybe starting on the fifth line, it says:

25 "...Linda Berry found that "for

1 the vast majority of retrofit programs,
2 penetration rates of a few per cent (or
3 less) per year are typical."

4 And I emphasize per year. What they may
5 be talking about here is penetration rates and savings
6 per year. I don't know the context, I have got to read
7 this.

8 But if what they are speaking is that
9 typical conservation and load management programs are
10 reaching less than 5 per cent of the eligible customers
11 per year, if that's what in fact they are talking
12 about, then that is a significant amount. Over 10
13 years you will reach 50 per cent or so.

14 MR. HEINTZMAN: Q. Well, I read this as
15 saying reducing energy use among participating
16 customers by less than 10 per cent and reducing utility
17 peak by less than 1 per cent.

18 MR. SHALABY: A. But if that's per
19 year -- see, the sentences after that refer to a yearly
20 penetration rate. This is the reason I am wanting to
21 read this at a bit more depth to know whether they are
22 talking about reaching customers on an annual basis or
23 over a 10-year period or over what period of time.

24 I think we have to be careful in
25 analyzing the words and the data and make sure that

1 it's comparable to what we are saying. It's very easy
2 to take data that is on a different basis and compare
3 it to our data.

4 Q. Yes, that is true, but I have been
5 trying to find some statistics that would support -- or
6 give us something that's reliable.

7 This is a conference in Toronto of
8 somebody who, in a paper report prepared by someone who
9 was your consultant, it seems to be as relevant to
10 Ontario Hydro as anything. Are you aware of any --

11 MR. B. CAMPBELL: Mr. Chairman --

12 THE CHAIRMAN: Just a minute. If Mr.
13 Campbell is going to say this is a matter that was
14 discussed in Panel 4, I think that is probably right.
15 We went into a great deal of evidence in Panel 4 about
16 whether or not the demand side management program was a
17 viable program, whether the targets were proper, how
18 the expectations were being met and so on.

19 That seems to be what these questions are
20 directed to, and I just don't know whether you want to
21 revisit all those matters again.

22 MR. HEINTZMAN: I guess not, Mr.
23 Chairman. If it seems like ground that has been
24 ploughed previously, then I will leave it on that
25 basis.

1 THE CHAIRMAN: Well, my recollection is
2 that this was a big, big part of what we discussed in
3 Panel 4. The bottom line, as I recall it - and I
4 shouldn't say this - is that Hydro recognizes these are
5 ambitious targets that will require a great deal of
6 energy and the cooperation of not only Ontario Hydro
7 but the entire community to achieve, and that that is
8 what they are setting out to do and they hope that they
9 are going to make it, but they don't know.

10 MR. HEINTZMAN: But that was in the
11 context of a demand management program that was much
12 more modest or certainly considerably more modest as an
13 official policy.

14 THE CHAIRMAN: No, no. In Panel 4 they
15 came in with the figures, I don't know whether it was
16 exactly 5,200 but it was around there, they gave us the
17 update projections in Panel 4.

18 MR. HEINTZMAN: They gave us the update
19 projections. But, in any event I understand the
20 Chairman's view of the matter. Let me press on with
21 something else.

22 MR. SHALABY: I would also suggest
23 reading the entire article because even flipping to the
24 next page, the very next page, page 27, the bottom of
25 the first paragraph reads:

1 "When there is strong enough
2 motivation (and a sufficient commitment
3 of resources) to acquire
4 energy-efficiency resources,
5 participation levels above 50
6 per cent can probably be obtained for
7 most program types and for most customer
8 groups..."

9 This is a concluding sentence that they
10 leave with us under that paragraph. It's just that one
11 has to understand the basis with which data and the
12 numbers are referred.

13 MR. HEINTZMAN: Q. Well, I was getting
14 at the distinction between participation rates and
15 actual success in the programs, but I will leave it
16 with the way that it has been left by Panel 4.

17 THE CHAIRMAN: And of course just for you
18 and others, it's open of course to any intervenor to
19 bring in whatever evidence they feel is appropriate to
20 question those assumptions that have been made.

21 MR. HEINTZMAN: Q. Coming back to, I
22 guess you, Mr. Snelson, on this whole question of the
23 date that we need to get going with new supply and you
24 in your evidence in chief expressed one view, and I'm
25 suggesting to you that if the Board doesn't accept

1 that, then a need to get going with it will drive
2 different results.

3 That's a fair statement; isn't it?

4 MR. SNELSON: A. That is possible.

5 Q. Yes. And particularly when we are
6 talking about nuclear generation, if the nuclear
7 moratorium is not going to be lifted before a decision
8 from this Panel, then that is another influencing
9 effect on that decision; isn't it?

10 A. The link between the nuclear
11 moratorium and the finishing of this hearing is not a
12 necessary link.

13 Q. But if it is a link, if the nuclear
14 moratorium is not going to be lifted until a decision
15 from this Panel, then it's a link?

16 A. I don't know when the nuclear
17 moratorium is going to be lifted. I don't know what
18 factors the government will take into account, although
19 I do understand that they indicated that they may
20 consider it after the end of this hearing.

21 Q. Well, let's see what Mr. Holt had to
22 say about that connection. If I can ask you to turn to
23 the Canadian Energy News that I have handed to you.

24 THE REGISTRAR: 697.

25 THE CHAIRMAN: Thank you.

1 ---EXHIBIT NO. 697: Document entitled: Canadian
2 Energy News, Volume VII, Number 10, May
3 15, 1992.

4 MR. HEINTZMAN: Q. Do you have a copy of
5 that in front of you, sir?

6 MR. SNELSON: A. Yes, I do.

7 Q. And if you would turn to page 76
8 under the heading Nuclear Energy, Utility Outlines
9 Nuclear Alternatives if Moratorium Lifted. Do you see
10 that?

11 A. Yes, I do.

12 Q. It reads:

13 Ontario Hydro has outlined possible
14 nuclear technologies for future base load
15 generation in the event that the nuclear
16 moratorium in Ontario is lifted. These
17 alternatives were presented to the
18 Environmental Assessment Board late in
19 March.

20 The underlying assumption is that
21 the moratorium would be lifted after the
22 hearings are completed in 1993. Ontario
23 Hydro President Alan Holt cautioned that
24 the list of alternatives would change if
25 the moratorium continued for the next
 five years.

1 And this is an interview conducted with
2 Mr. Holt, you are aware of that?

3 A. I'm not aware of that specific
4 interview, but I obviously am aware who Mr. Holt is.

5 Q. Yes, right. And Mr. Holt goes
6 through some of the things we have heard about in Panel
7 9 and he concludes about a quarter of the way down the
8 right-hand side of page 76:

9 With respect to the timing of new
10 units, Mr. Holt noted that referral of
11 long term planning and great emphasis on
12 private power generation in the
13 short term means that Ontario Hydro may
14 have six or seven more years of planning
15 time. The deadline to start planning is
16 approaching fast, however. Mr. Holt
17 noted that if new generation is required
18 by 2009, then Ontario Hydro will need to
19 start its planning in 1995.

20 Do you see that?

21 A. Yes, I do.

22 Q. So that what Mr. Holt is saying is if
23 the nuclear moratorium is lifted in 1994, presuming a
24 decision from this Board in 1993 -- he doesn't say --

25 THE CHAIRMAN: Where does it say, assumes

1 a decision from this Board. That's where I missed.

2 MR. HEINTZMAN: No, he doesn't say that.
3 He says, the underlying assumption is that the nuclear
4 moratorium will be lifted after the hearings are
5 completed in 1993.

6 THE CHAIRMAN: All right.

7 MR. HEINTZMAN: Q. He then goes on to
8 say that if new generation is required by 2009, then
9 Ontario Hydro will need to start its planning in 1995.

10 And I'm suggesting to you that what he's
11 getting at is that we need to start the plans
12 immediately; i.e., within two years of the hearings in
13 order to maintain all of the alternatives that's
14 available; isn't he?

15 MR. SNELSON: A. Well, I'm not sure that
16 Mr. Holt is necessarily saying that he wants to
17 maintain all of the alternatives that are available.

18 For instance, in the third paragraph in
19 the top it says:

20 ...Mr. Holt indicated he is opposed
21 to further multi-unit stations that would
22 repeat the problems Ontario Hydro has
23 experienced with Darlington. In addition
24 to high initial capital costs and
25 planning inflexibility, technical or

1 scheduling problems create greater
2 financial difficulties than if problems
3 appear with a single unit plant.

4 Q. And it continues:

5 Mr. Holt said he recommended that
6 new units be introduced in a more
7 staged manner than was the case with
8 Darlington. Et cetera.

9 A. Yes.

10 Q. But what he's saying is that if you
11 want access to all of the range of these alternatives,
12 whether you be in favour or against any particular one,
13 then you need that kind of lead time in order to have
14 access to them?

15 A. Well, I don't know specifically what
16 Mr. Holt is implying by the 1995 date.

17 Q. Implying. He's stating that Hydro
18 will need to start its planning in 1985. That is what
19 he's stating.

20 A. Yes.

21 Q. Right?

22 A. That's what he's stating.

23 Q. Now, let's turn to the
24 interrogatories that we have put before you. And have
25 your interrogatory packages been made available?

1 THE REGISTRAR: This is to be given a
2 number, Mr. Chairman?

3 THE CHAIRMAN: Are they all
4 interrogatories?

5 MR. HEINTZMAN: They are all
6 interrogatories.

7 THE CHAIRMAN: Then you don't need to
8 give them a number.

9 THE REGISTRAR: All right.

10 MR. HEINTZMAN: Q. And if you could turn
11 to the second interrogatory, 10.42.8, and I think this
12 in one place captures some of the evidence that is
13 already on the record in Exhibit 519, I think it is, of
14 the nuclear panel.

15 So if we may give the Interrogatory
16 10.42.8 a number, Mr. Chairman.

17 THE REGISTRAR: That will be 683.14.

18 ---EXHIBIT NO. 683.14: Interrogatory No. 10.42.8.

19 MR. HEINTZMAN: Q. And that
20 interrogatory, Mr. Snelson, asked.

21 Considering the timing of new
22 nuclear capacity being projected by
23 Ontario Hydro and the requirement for a
24 site-specific environmental assessment,
25 what is the latest year during which a

1 decision is required to ensure timely
2 availability of the needed nuclear
3 capacity.

4 And we asked your response in terms of a
5 4 times 881 megawatt nuclear generation station and a
6 station based upon individual CANDU 6 units, and your
7 response was:

8 In terms of the 881, 12.25 years
9 for an existing site or 15 years for a
10 new site, and for a CANDU 6, 10.25 years
11 for an existing site and 14 years for a
12 new site.

13 See that?

14 MR. SNELSON: A. Yes, I do.

15 Q. Now, you will agree with me that if
16 you are going to get a need and rationale approval for
17 a CANDU 6 you can't guarantee that your site-specific
18 hearing is going to give you any particular site; can
19 you, from a planning perspective, you would have to
20 plan on having those two alternatives; i.e., an
21 existing site or a new site available to you?

22 A. Under the Environmental Assessment
23 Act, I believe you cannot presume that you would be on
24 a specific site.

25 Q. Right. So that if you are going to

1 get a need and rationale approval for a CANDU 6, you
2 need that need and rationale approval for 14 years
3 before 2009 or approximately 1995; right?

4 A. The 14 years is when you would need
5 to start to proceed with preparing site-specific
6 environmental assessment.

7 Q. Yes. And you are not going to do
8 that unless you get some need and rationale approval in
9 order to do so, assuming you are going to go with the
10 need and rationale hearing and then a site-specific
11 hearing?

12 A. Not necessarily.

13 Q. And how not necessarily?

14 A. Well, in 1989 we decided that we
15 wanted to go with an approval of need and rationale and
16 we started in parallel with the preliminary engineering
17 and site evaluation work for the site-specific hearing
18 in parallel with the plan stage hearing, with this
19 hearing.

20 Q. Yes. But this question asks you,
21 what is the latest year in which you have to have a
22 decision to move forward that assumes all of that, and
23 we are being told 14 years.

24 A. The answer, and it may or may not
25 have interpreted the question correctly, but the answer

1 is quite specific, total lead time is the time interval
2 from the beginning of a site-specific environmental
3 assessment, and that's from the beginning of the
4 preparation of the site-specific environmental
5 assessment, and in 1989 we started that in parallel
6 with the plan stage hearing prior to having approval of
7 need.

8 Q. Well, that's right, but that doesn't
9 necessarily mean that you had to have approval from
10 this Board if you are going to separate out the two.

11 A. They were separate in 1989 and the
12 work was going in parallel with the plan stage hearing.

13 Q. Well, all right. I don't understand
14 what you are saying that it's different from what this
15 answer is telling us.

16 THE CHAIRMAN: Excuse me. Are you
17 saying, Mr. Snelson, that the 14 years would include
18 both the rationale and the site-specific aspects of the
19 environmental assessment no matter whether you went
20 with separate hearings or one hearing, you would still
21 need 14 years but no longer; is that what you are
22 saying?

23 MR. SNELSON: You certainly need 14 years
24 from the - this is the estimate here - that you need 14
25 years from the time you start to prepare an

1 environmental assessment, start to do some site
2 selection work and so on, because I think site
3 selection will be in the 14 years for a new plant. But
4 some of that work can proceed in parallel with a plan
5 stage hearing, if that's the route one goes, for a need
6 and rationale for that technology.

7 There does come some point where they
8 have to come together, but they can start in parallel.

9 THE CHAIRMAN: Well, I think you said in
10 your evidence that you hadn't decided yet which way you
11 were going to go in the future. And that's fair
12 enough.

13 MR. SNELSON: Yes.

14 THE CHAIRMAN: But I take that in order
15 to get both hurdles jumped either through one hearing
16 or two hearings, 14 years is the time you say it should
17 take?

18 MR. SNELSON: From the start of that
19 process, and I did agree with the counsel from MEA that
20 one would need some definition phase work within -- I
21 think around three years I indicated in his
22 cross-examination from today.

23 So that is consistent with the '95 date
24 Mr. Holt is talking about.

25 THE CHAIRMAN: So that would be 17 years

1 then; do I understand you correctly?

2 MR. SNELSON: No, '95 to 2009 is 14
3 years.

4 THE CHAIRMAN: No, no, but I'm looking at
5 the 14 years on 10.42.8 --

6 MR. SNELSON: A. Yes.

7 THE CHAIRMAN: And you have just said
8 that you had agreed with MEA that you needed some extra
9 time, definition time, prior to the filing of the EA
10 and that that might be up to three years?

11 MR. SNELSON: No, I wasn't intending
12 that. I was intending that the definition phase time,
13 I think that is clear here, that the definition phase
14 time is included in the 14 years because if you go to
15 Exhibit 519, page 74, which is the table of schedules
16 that Mr. Penn showed in Panel 9, then he shows the
17 definition phase and acquisition phase separately and
18 the sum of the two is the total lead time that is shown
19 on this interrogatory, Interrogatory 10.42.8.

20 [2:57 p.m.]

21 THE CHAIRMAN: Exhibit 519?

22 MR. SNELSON: Exhibit 519, page 74.

23 MR. HEINTZMAN: Q. Perhaps we could look
24 at that together. That's, Mr. Penn's chart showing a
25 mid-1993 start date for definition phase.

1 MR. SNELSON: A. Page 74, assumes
2 mid-1993 start date and then shows the corresponding
3 first unit in-service dates that would correspond to
4 that.

5 Q. Yes. So that under a new CANDU site
6 we have got the five and the nine, is 14 years?

7 A. That is correct.

8 Q. And this doesn't include any time to
9 obtain need and rationale approval. This is all based
10 upon obtaining site-specific approval.

11 A. As I have indicated, the need and
12 rationale approval, if necessary, can proceed in
13 parallel with part of that time.

14 THE CHAIRMAN: I thought he had said that
15 the whole, that both things would be included in the 14
16 years whether they were done in two hearings or one
17 hearing.

18 MR. HEINTZMAN: I don't --

19 THE CHAIRMAN: That's what I thought he
20 said but maybe he didn't.

21 MR. SNELSON: Referring to Mr. Penn's
22 evidence?

23 THE CHAIRMAN: No, no, no. I am taking
24 about the 14 years. The 14 years includes
25 environmental assessment approval both need and

1 rationale and site specific whether they are in one
2 process or whether they are in two.

3 MR. HEINTZMAN: Q. Is that what you are
4 telling us, Mr. Snelson, because that is what the
5 Chairman is asking, I think.

6 THE CHAIRMAN: If it is a problem about
7 it perhaps you can tell us what is worrying you about
8 it.

9 MR. SNELSON: When we are moving in two
10 processes, then we have taken the view that we wanted
11 to have a need and rationale hearing from a plan stage
12 prior to the submission of the EA document for the
13 individual project. And the EA document submission is
14 partway through the definition phase.

15 So, it is possible that there is some
16 degree of overlap but it may not be total overlap.

17 MR. HEINTZMAN: Q. So it's likely, is it
18 not, that there is going to be additional time to the
19 14 years shown here on Exhibit 683.14 which only allows
20 for site-specific environmental assessment, doesn't it?

21 MR. SNELSON: A. The 14 years is based
22 on the site-specific environmental assessment and I
23 haven't got with me, I have the schedule for a site on
24 an existing station, but I don't have the schedule for
25 a site on a new --

1 Q. It's right on the page, on Exhibit
2 683.14?

3 A. 683. Sorry.

4 Q. The interrogatory has both existing
5 and new site on it?

6 A. That is correct. But it doesn't have
7 the complete schedule separated out with the submission
8 date of the environmental assessment.

9 Q. Well, are you looking for page 78 of
10 Mr. Penn's exhibit, 519?

11 A. I have that and that is for an
12 existing site.

13 Q. Yes.

14 A. And for instance, that shows the
15 submission of the environmental assessment document, in
16 this particular case, 18 months into the definition
17 phase.

18 THE CHAIRMAN: And Mr. Penn said in his
19 evidence that it will be another 12 months if it were a
20 new site. So it would be altogether thirty months.

21 MR. HEINTZMAN: For an existing site,
22 CANDU 6.

23 THE CHAIRMAN: For a new site.

24 MR. HEINTZMAN: No, no,

25 THE CHAIRMAN: The chart shows 18 months

1 for an existing site.

2 MR. HEINTZMAN: Which chart are we
3 looking at now?

4 THE CHAIRMAN: 78.

5 MR. HEINTZMAN: That's an existing site.

6 THE CHAIRMAN: 18 months, that is an
7 existing site and Mr. Penn said, if it was a new site
8 you had to put another 12 months on to that.

9 MR. HEINTZMAN: I don't believe so, Mr.
10 Chairman, because we had that on page 74, the new site
11 and the existing site. One was 10-1/4 years and one
12 was 14 years.

13 MR. B. CAMPBELL: Mr. Chairman, the
14 evidence was clear that the differences between the new
15 and existing site did not relate solely to longer
16 definition phase work. I believe there was evidence as
17 well about site clearance requiring -- there were other
18 periods of time elsewhere in the schedule. I think
19 when you look at the total difference between new and
20 existing, there were some other differences and he was
21 speaking solely to those differences in the definition
22 phase, I believe.

23 THE CHAIRMAN: I think that is right.

24 MR. HEINTZMAN: Q. Well, we don't have
25 to worry about it too much because we have an

1 interrogatory that gives us the numbers. And what I'm
2 suggesting, and I think you have agreed, is that the
3 additional time that is necessary for a need and
4 rationale hearing or to add a need and rationale
5 hearing on to the site-specific hearing is not included
6 in the 10.25 or the 14 years. You have agreed with me
7 on that I believe?

8 MR. SNELSON: A. No, I have agreed that
9 in large measure it can run in parallel, which means
10 that it's not additional.

11 Q. We could have the transcript read
12 back. But you said to some extent there is an
13 additional period of time for need and rationale?

14 A. To the degree that it cannot go on in
15 parallel. For instance, in the existing site there is
16 18 months between the start of the definition phase and
17 the submission of the environmental assessment
18 document.

19 Q. That's for a site-specific hearing?

20 MR. B. CAMPBELL: No, that is before the
21 submission of the document.

22 MR. SNELSON: That is the submission of
23 the document to the site-specific hearing.

24 MR. HEINTZMAN: Q. That's for a
25 site-specific hearing, not a need and rationale

1 hearing?

2 MR. SNELSON: A. That is not for a
3 site-specific hearing. The site-specific hearing would
4 follow that. It follows the submission of the EA
5 document.

6 Q. With respect, page 78 - it's clearly
7 on the record - is a process in which there is only
8 site-specific approval, not need and rationale
9 approval. That much we can take.

10 MR. B. CAMPBELL: I think we have ships
11 crossing in the night here and I'm going to, if you let
12 me, I think I'll try --

13 MR. HEINTZMAN: No, I don't think we need
14 my friend's help, we need the witness' help and if the
15 witness can help me?

16 THE CHAIRMAN: Mr. Heintzman is entitled
17 to that if he wants to take that position.

18 MR. B. CAMPBELL: I wasn't going to say
19 anything the witnesses haven't said. I think Mr.
20 Heintzman is misstating the witness's answer.

21 MR. HEINTZMAN: Q. Do I have it, Mr.
22 Snelson, that there will be some time in addition to
23 what we see in Exhibit 683.14, for the determination of
24 need and rationale, if it is not determined in this
25 hearing?

1 MR. SNELSON: A. There may be.

2 Q. There may be. But we can say that if
3 we have approval of need and rationale in this hearing,
4 and let's say that occurs in 1994, then 14 years exists
5 between then and 2009, which is the 14 year lead time
6 for a new station site for a CANDU 6. Right?

7 A. Your arithmetic is correct.

8 Q. Good. And if it's a 4 times 881
9 unit, then the same process requires that if the Board
10 gave approval in 1994 for a need and rationale for
11 CANDU technology, then there would be 15 years, which
12 is the required lead time to bring on a new site a 4
13 times 881 nuclear generating station. If my
14 mathematics are again correct.

15 A. Yes.

16 Q. And I don't know if you have that
17 Exhibit 519 at page 81. We are on the right-hand side,
18 we have the lead times and in each case the long lead
19 times of the new sites, and just running down the
20 right-hand side, those lead times for those of us who
21 work in years better than months, are 15 years, 13-1/2,
22 14 years, 11-1/4 years, 13-1/2 years, 14-1/2 years, 14
23 years, 14-3/4 years, 14 years, 13 years, 13-1/2 years.
24 So that if the Board gives a need and rationale
25 approval in 1994, there is time for those options to be

1 considered and dealt with at a site-specific hearing,
2 et cetera.

3 A. You made one conversion for each of
4 the options, I think, from months to years. I wasn't
5 fast enough to check your arithmetic but I did notice
6 that you gave one period for each time whereas this
7 gives a range, so I am not quite sure what the
8 correlation is.

9 Q. The correlation is that the shorter
10 time is for an existing site.

11 A. And the figures that you were giving
12 were for the longer term?

13 Q. Yes. So, if you want the options and
14 you have no guarantee of site-specific approval at any
15 specific site and if you want to consider ranges or
16 alternatives that include 14 years, 15 years, et
17 cetera, then if the Board's approval is in 1994, you
18 have time for those considerations, don't you, on my
19 mathematics?

20 A. Your mathematics is obviously
21 correct. We don't necessarily need an approval from
22 this Board to start some of the preliminary activities
23 that were required for some of these options.

24 Q. Well, you need, certainly, the
25 moratorium to be lifted to do any of this work?

1 A. For nuclear options we need the
2 moratorium to be lifted, yes.

3 Q. And on the other hand, if the Board
4 doesn't give need and rationale approval and we go
5 through a need and rationale hearing of the same nature
6 as we have gone through in this hearing, we are not
7 going to make any of those dates, are we?

8 A. This hearing has taken a long time
9 and we have indicated in Exhibit 452 that we are
10 interested in quicker type of approval processes,
11 approval processes that can build on existing types of
12 information rather than going through everything all
13 over again.

14 Q. Well, hasn't Ontario Hydro tried to
15 expedite this hearing to the extent it is possible?

16 A. Yes.

17 Q. Can you suggest to me that a need and
18 rationale hearing is going to be of any more
19 penetrating analysis than this one?

20 A. I don't know.

21 Q. Well, if you don't know then you
22 cannot count on the hearing being of any lesser nature
23 or any lesser duration, can you?

24 A. I think there is a hope that the
25 process, having once aired all the issues in great and

1 exhausting detail, that the subsequent processes might
2 be somewhat shorter.

3 Q. If the Board makes a determination
4 and approves the rationale, if it doesn't then we start
5 off from ground zero, don't we?

6 A. I think we start off from wherever
7 this Board is has finished.

8 Q. You will agree with me, sir, is it
9 not fairly evident, that if we go through the same
10 process, we are not going to make these time limits set
11 out on page 81 of Exhibit 519 are we?

12 A. If we end up with very long approval
13 processes, then there is a risk that we will not make
14 the in-service dates that we plan on and that we will
15 plan on other things instead.

16 Q. Yes.

17 Now, I want to turn to the Manitoba
18 Purchase panel for a moment. And can any of you tell
19 me whether you were involved in the planning and
20 negotiation of the Manitoba Purchase?

21 Do I take it that none of you were
22 involved in the planning and negotiation of the
23 Manitoba Purchase?

24 A. I was somewhat involved. I was
25 managing a department at the time and Mr. Huggins was

1 one of my section heads.

2 Q. And was Mr. Huggins the man more
3 directly involved in that exercise?

4 A. Yes.

5 Q. So, we can rely upon the evidence of
6 Mr. Huggins with respect to the characteristics of the
7 Manitoba Purchase?

8 A. I believe so.

9 Q. And would I be correct that the basic
10 economics of the Manitoba Purchase are not as
11 favourable now as they were when they were first
12 reviewed?

13 THE CHAIRMAN: What do you mean when they
14 were first reviewed?

15 MR. HEINTZMAN: Well, there was a
16 document that Mr. Huggins put into evidence that was a
17 review of the Manitoba contract, if I can get the
18 exhibit. We have an update on the review of the
19 Manitoba Purchase, which is --

20 MR. B. CAMPBELL: I think if it's the
21 update that is being referred to, the evaluation of the
22 April 1992 evaluation, the update is 442.7.

23 MR. HEINTZMAN: Q. The original
24 examination of the Manitoba Purchase was in report SP
25 686, date December, 1989 if I recall, Mr. Snelson, is

1 that not correct?

2 MR. SNELSON: A. Yes, and I believe that
3 is Exhibit 434.1, for the record.

4 Q. So, putting those time frames on the
5 examination, am I correct that the basic economics of
6 the Manitoba Purchase are not as favourable as they
7 were when they were reviewed in that earlier document
8 now Exhibit 434.3?

9 A. There is not a large change in the
10 cost/benefit ratio.

11 [3:15 p.m.]

12 Q. Well, let me talk about the basic
13 economics of the actual energy and capacity and
14 transmission.

15 Would you agree with me that the basic
16 economics of the energy and capacity and transmission
17 are not as favourable now as they were in 1989?

18 A. I did indicate in my direct evidence
19 that the current evaluation is a little bit less
20 favorable than the one that Mr. Huggins talked about,
21 which is an intermediate one.

22 Q. Yes.

23 A. And that was not because of a change
24 in the cost/benefit ratio, it was more a question that
25 one of the non-quantified benefits was now included as

1 a quantified benefit.

2 Q. I'm going to come to that so-called
3 non-quantified benefit, and that's something you call -
4 what is it again - acid gas replacement or something
5 like that?

6 A. That is correct.

7 Q. Yes.

8 A. Acid gas credit.

9 Q. Acid gas credit. You are giving the
10 Manitoba Purchase an acid gas credit; is that right?

11 A. Yes.

12 Q. And that is because the Manitoba
13 Purchase saves acid gases from being produced into the
14 atmosphere; is that right?

15 A. Compared to the alternative plan to
16 which it was compared, yes.

17 Q. Do you give nuclear generation
18 anywhere an acid gas credit, Mr. Snelson?

19 A. I can't recall having specifically
20 given nuclear an acid gas credit, but if you design two
21 plans to have the same acid gas emissions, one of them
22 has nuclear plant and one doesn't, then that would
23 effectively be giving them an acid gas credit.

24 Q. No, you add an additional acid gas
25 credit to the Manitoba situation we'll look at over and

1 above, just comparing them, to a nuclear or fossil
2 generating system; don't you?

3 A. No. The Manitoba Purchase evaluation
4 is done on the basis of two plans, one with the
5 purchase and one without, there are adjustments made to
6 capacity to bring the capacity to the same level, and
7 there are adjustments made to acid gas control measures
8 to bring the acid gases to the same level.

9 Q. You give the Manitoba purchase a
10 credit on account of that acid gas, and I suggest --
11 the fact that less acid gases are produced, and in none
12 of the nuclear plans is a similar acid gas express
13 credit given; isn't that the fact?

14 A. In the period we have shown where the
15 nuclear is coming in post-2009, we have not adjusted
16 acid gas, I don't believe.

17 I think there is some effective credit
18 given, though not complete, and that is that the
19 fossil-fueled options that are used to replace nuclear
20 in a fossil plant have very high level of acid gas
21 controls and that's part of the cost that is compared
22 to the nuclear option.

23 Q. Then, in addition to that, you don't
24 give nuclear generation any credit for the remaining
25 fact that you don't have to have the acid gases if you

1 have nuclear; do you?

2 A. I don't believe we have in this case.

3 Q. Yes. So let's then turn to the
4 individual ingredients of the Manitoba Purchase that
5 make it less desirable, and the first is that more
6 transmission is required now than was originally
7 thought necessary; right?

8 A. Certainly the degree of advancement
9 of transmission, the cost of the transmission required
10 is substantially higher now than it was then.

11 Q. That and more transmission is
12 necessary now than it was under the original program;
13 Mr. Huggins told us that.

14 A. I'm not quite sure in what regard he
15 was talking to that.

16 Q. Well, we can read his transcript for
17 that. The second thing is to the extent that more
18 transmission is required, there's higher environmental
19 and social costs; correct?

20 A. If there's more transmission
21 required, then there is more impact from that which may
22 have environmental and social effects.

23 Q. And in this document, Exhibit 442.7,
24 do you have that available to you?

25 A. Yes.

1 Q. You don't analyze the environmental
2 or social costs of the transmission line and, more
3 particularly, the additional transmission line; do you?

4 A. No, though I believe that such
5 matters were discussed extensively with Panel 7.

6 Q. All right. Well --

7 A. And they should not have changed.

8 Q. We will rely upon it for that, but
9 there is nothing in this document that analyses those
10 aspects.

11 And then the next thing, you said the
12 cost of the transmission, to accommodate the larger
13 transmission, and as you point out its earlier need,
14 has gone up very substantially; correct?

15 A. That's correct.

16 Q. And perhaps we can just get an idea
17 of how much that has gone up if we look at this
18 document Exhibit 442.7 at table D-1, it's about two
19 thirds of the way through the document in Appendix C.

20 THE CHAIRMAN: Are you going to be
21 spending quite a bit of time on this because I think we
22 should have 442.7. We don't seem to have it.

23 MR. HEINTZMAN: Oh yes, you should
24 definitely have it.

25 THE CHAIRMAN: It's an undertaking 442.7,

1 it's responses to Undertaking 442.7.

2 THE REGISTRAR: 442 .7.

3 THE CHAIRMAN: Perhaps we should take the
4 afternoon break now and we can get organized.

5 MR. HEINTZMAN: Thank you.

6 THE CHAIRMAN: We will take a 15-minute
7 break.

8 THE REGISTRAR: Please come to order.
9 The hearing will take a 15-minute recess.

10 ---Recess at 3:22 p.m.

11 ---On resuming at 3:40 p.m.

12 THE REGISTRAR: Come to order. This
13 hearing is again in session. Please be seated.

14 THE CHAIRMAN: Mr. Heintzman.

15 MR. HEINTZMAN: Do you have the exhibit?

16 THE CHAIRMAN: Yes, we do. That's 442.7.

17 MR. HEINTZMAN: Yes. And it has a number
18 of appendices to it.

19 Q. And if we could look at Appendix C to
20 the chart, that is after page 4 entitled: Table D-1.

21 MR. SNELSON: A. In my copy the table
22 D-1 is in appendix D, not appendix C.

23 Q. Oh, maybe mine is wrong. Oh yes,
24 I'm sorry, yes, you are right. I didn't see that
25 there.

1 And appendix D is the analysis of the
2 presentation or current results as opposed to those
3 examined in the original December, 1989 document and in
4 the update of that from Panel 7.

5 So if we can look to table D-1, and I am
6 now interested in the transmission numbers and this
7 analysis is presented down to about two thirds of the
8 way down through a Proposed column and a Fossil column
9 and we will recall that the proposed column was a more
10 nuclear system than the fossil system; correct?

11 A. That is correct.

12 Q. And what we are doing here is we're
13 analyzing the cost -- in each of the boxes we see on
14 the page we are analyzing the cost of a Manitoba
15 Purchase integrated into a proposed system as it then
16 was, which was more nuclear than fossil, and what is
17 the cost of that system as opposed to the value of that
18 system; right?

19 A. That is correct.

20 Q. So we are not comparing a Manitoba
21 system to a non-Manitoba system in which we have got
22 nuclear generation, we are comparing a system in which
23 we have the Manitoba purchase and some nuclear against
24 the value of it?

25 A. Well, in determining the value then

1 there are two generation plans behind. This is the
2 full system simulation method of determining
3 effectively system -- avoided cost, which was discussed
4 in Panel 3. So you have a plan that meets the need for
5 electricity with the Manitoba Purchase, then you have
6 another plan that is similar in most respects except
7 that the Manitoba Purchase is eliminated, and certain
8 other options are used to replace it to make the two
9 systems have the same capability.

10 Q. But we don't compare it to a system
11 where you take out all of the Manitoba base load and
12 insert, megawatt for megawatt, a nuclear system; do we?
13 That's not what these do?

14 A. The replacement options will be a mix
15 of options depending on the circumstances and what is
16 considered to be the best alternative plan.

17 Q. And then for the 1992 Plan Update you
18 have got at the bottom of page 3 comparisons to match
19 up with your enhanced plan, your nuclear so-called plan
20 and fossil plan, again comparing the cost of the plan
21 to the value of the plan?

22 A. That is correct.

23 Q. And let's just look at the
24 transmission costs and what's happened to them. If we
25 go back to 1989, it was thought that the additional

1 costs of the Manitoba Purchase vis-a-vis a system
2 without it would be \$80 million?

3 A. That is correct.

4 Q. In 1991 present value terms; right?
5 That's what it says on the top of the page?

6 A. Yes, that is correct.

7 Q. And by 1991 the cost of the
8 transmission system of the Manitoba Purchase over that
9 of another system is now \$373 million in 1991 present
10 value terms?

11 A. That is correct, it's the difference
12 between two large numbers.

13 Q. Yes, the \$373 million is the
14 additional cost of the Manitoba transmission system?

15 A. That is correct.

16 Q. And now in the 1992 Update, just
17 sticking with the nuclear so-called alternative, the
18 transmission system is going to cost \$451 million more
19 than a system that does not include the Manitoba
20 Purchase?

21 A. That is correct.

22 Q. All right. The total value of the
23 energy, if we just stay in the nuclear situation, is
24 \$1,722 million in 1991 terms, just sticking with the
25 capacity energy component?

1 A. That is what the table indicates,
2 yes.

3 THE CHAIRMAN: Where do you get 1,722?

4 MR. HEINTZMAN: It's just under the
5 heading Nuclear near the bottom of the page.

6 THE CHAIRMAN: Yes, I see it.

7 MR. HEINTZMAN: There's cost of purchase
8 and then there's VOP, value of purchase, and running
9 across to the nuclear line--

10 THE CHAIRMAN: I have got it.

11 MR. HEINTZMAN: --1,722.

12 Q. And if we drop down further we have
13 got transmission losses of \$43 million? Do you see
14 that?

15 MR. SNELSON: A. That is correct.

16 Q. So looking at the -- sorry, looking
17 just at the value of the capacity energy and the cost
18 of the transmission, we now have a system which is
19 going to cost us in transmission total and losses
20 almost \$500 million to deliver capacity energy worth
21 \$1,722 million in 1991 dollars; right?

22 A. Yes. There are additional benefits
23 that are indicated there.

24 Q. Well, we will come to those in a
25 minute, but isolating those, it means that this

1 transmission system, including its cost and its
2 transmission losses, is almost a third of the value of
3 the energy at \$1,722 million.

4 We are talking about \$500 million for
5 transmission and losses and we are getting capacity and
6 energy worth \$1,722 million.

7 A. It's somewhat less than a third but
8 it is a substantial proportion.

9 Q. Do you know of any other system in
10 Ontario where you are spending upwards of 30 per cent
11 to transmit energy in relation to the capacity energy
12 you are getting?

13 A. I suspect that the transportation
14 cost of our coals from Western Canada are a large
15 proportion of the delivered cost in Ontario.

16 Q. I was thinking of electrical
17 transmission.

18 A. I don't know of another option that
19 we have considered recently that has had that big a
20 proportion.

21 Q. And the next thing that is pointed
22 out in this document is -- so we have got more
23 transportation, more costly transportation and the
24 higher proportion of the transportation to capacity
25 energy.

1 We also can see that the value of the
2 capacity energy has fallen from the 1991 evaluation
3 from \$1,811 million to \$1,722 million. Do you see
4 that?

5 A. That has fallen from the 1991 to the
6 1992 evaluation.

7 Q. Yes. It had risen from in the 1989
8 evaluation from, again in the proposed plan, of \$1,665
9 million to \$1,811 million and now it has fallen back to
10 \$1,722 million?

11 A. Yes.

12 Q. Right. And the next factor that is
13 pointed out in this document is that because of lower
14 load growth the value, and I guess that's inherent to
15 what we are looking at, is not as great as what it had
16 been in prior scenarios?

17 A. I believe that is a factor, yes.

18 Q. Yes. Perhaps we can look to page 8
19 of this document, again the first part of it.

20 A. This is in the main body of the
21 report?

22 Q. Yes.

23 A. Or one of the appendices.

24 Q. No, in the main body. The figures
25 that we just looked at are on a median load growth

1 basis; are they not, on table D-1?

2 A. That is correct.

3 Q. So what table 1 on page 8 tells us is
4 some analysis of the situation if there is a median,
5 upper and low growth, and if you turn with me to the
6 bottom of that document - and you are trying to
7 determine the cost value difference in the low load
8 growth situation - as I understand this document, \$970
9 million in 1991 terms is the difference between the
10 Manitoba Purchase and the fossil plan; that is, the
11 Manitoba Purchase is worth almost a billion dollars
12 less under a low load growth situation than a fossil
13 plant; is that correct?

14 A. That is correct, if the purchase was
15 proceeded with under those circumstances. The
16 distinction between fossil and nuclear plan in the low
17 load growth case is not very meaningful because there's
18 very little capacity of any sort required in that plan.

19 Q. Well, there isn't a number opposite
20 the nuclear plan either?

21 A. That's correct. That is correct. I
22 believe it is a fossil-based plan, but I would imagine
23 there's very little new capacity required in that plan,
24 of any sort.

25 Q. Right. So that as between nuclear

1 and fossil we can say that in the low load growth
2 situation this purchase is going to cost Ontario about
3 a billion dollars more than the alternative system?

4 A. If there is no corrective action
5 taken, yes.

6 Q. Well, whoever prepared this, that was
7 their scenario for what would happen?

8 A. That is correct.

9 Q. In terms of the transmission cost, if
10 you would turn to appendix B, this shows us the
11 transmission that has to be developed in order to
12 develop the Manitoba interconnection, as I understand
13 it.

14 A. My understanding of this figure is
15 that the top half of the figure, approximately down to
16 subtotal, is the transmission costs with the Manitoba
17 Purchase and from figure 2 down to the second subtotal
18 is the corresponding costs of the transmission system
19 without the Manitoba Purchase.

20 Q. Right, right, that's what I meant to
21 say. And for instance, under the median growth we see
22 that the Manitoba Purchase is going to cost, in 1991
23 present value terms, \$812.6 million for transmission,
24 the other system that doesn't involve the Manitoba
25 system is going to cost \$361.7 million, so the net

1 extra cost of the Manitoba Purchase in terms of
2 transmission is \$450.9 million?

3 A. That's correct.

4 Q. And we can see where that arises in
5 that most of the transmission for Manitoba has to be
6 built right upfront in stage 1 for some \$752 million?

7 A. Yes.

8 Q. Do you see that? And we can see that
9 \$752 million running right across the top of the page.
10 So that whether we have high growth, low growth or
11 median growth, if this contract goes forward you have
12 to build that stage 1 line, you have to spend the \$752
13 million; right?

14 A. I'm sorry, can you repeat the
15 question. I missed a part of it.

16 Q. In either the median, the high or the
17 low load growth situation, stage 1 of the transmission
18 has to be built for a cost of \$752 million and that's
19 why we see it constantly across the page?

20 A. That is the cost of incorporating
21 that purchase into our system, yes, the initial cost.

22 Q. Right. And then there's some other
23 additional costs that we see running across, and if you
24 are in low load growth, the stage 2 we can see can be
25 put off indefinitely, so there's a zero cost, we do

1 have to spend something on what is called advanced
2 third north/south 500 kV line, but we have deferred
3 that so our cost is only \$17.8 million in 1991 terms;
4 is that right?

5 A. Yes.

6 [3:55 p.m.]

7 Q. So that the cost of the low load
8 growth transmission system is \$769.8 million in 1991
9 terms.

10 A. Yes.

11 Q. But as we looked down the page if we
12 didn't have the purchase, we wouldn't have built any of
13 that. So the purchase requires us to build \$769.8
14 million worth of transmission line, none of which will
15 be required in a low load growth situation, right?

16 A. None of which would be required in a
17 low load growth situation. It would, however, continue
18 to be useful, but it wouldn't have been required.

19 Q. But the people who have costed these
20 things out are telling us that in present value terms
21 we are spending \$769.8 million on a transmission system
22 which certainly within this planning period we get no
23 value from.

24 A. That we do not need, yes.

25 Q. That we do not need, yes. And we are

1 asking from this Board permission to do things, I see
2 running down the median load growth in stage two, 2017,
3 is that right?

4 A. The stage two activities at 2017?

5 Q. Yes.

6 A. I am not sure of the precise
7 definition of the Manitoba Purchase request and whether
8 those facilities, for instance, either need approval of
9 this Board or whether they are included in this
10 application. I'm somewhat unclear on that point.

11 Q. Well, I understood you were asking in
12 this application for approval of the transmission
13 facilities to accommodate the Manitoba Purchase.

14 A. Yes.

15 Q. I understood that stage 2 was part of
16 this analysis and is part of the Manitoba Purchase
17 transmission for which you are seeking approval.

18 A. As I said, Mr. Heintzman, I'm not
19 entirely clear on that point.

20 Q. Well, can you clarify it for me?

21 A. Yes.

22 MR. B. CAMPBELL: Do you want an
23 undertaking number?

24 MR. HEINTZMAN: Yes, please.

25 THE CHAIRMAN: Undertaking number?

1 THE REGISTRAR: 684.17.

2 ---UNDERTAKING NO. 684.17: Ontario Hydro undertakes to
3 clarify whether in this stage 2
4 application Hydro is asking for approval
of the transmission facilities to
accommodate the Manitoba Purchase.

5 MR. HEINTZMAN: Q. And then let's turn
6 to the LUEC of the Manitoba Purchase. If you would
7 turn with me to appendix C. On pages 2 and 3 you have
8 set forth the LUECs of the Manitoba Purchase, have you?

9 MR. SNELSON: A. On page 3?

10 Q. Page 2 and on page 3.

11 A. Yes.

12 Q. On page 2, you have set forth the
13 LUEC at the top of the page based upon on either a 65
14 ACF or 80 per cent ACF and then compared it to other
15 base load generating options, right?

16 A. Yes.

17 Q. And then on the chart on page 3, you
18 have done the same and showed us how you arrive at the
19 numbers of 5.30 for 65 per cent ACF and for 80 per
20 cent the number is 4.7.

21 A. Yes.

22 Q. Right. Now, I want to eliminate for
23 the moment what you have called or what this document
24 calls the cancellation and the interconnection benefit,
25 and I will come back to those in a moment. Those are

1 deductions from the calculation of the ACF, right?

2 A. That is correct.

3 Q. If you eliminate those and you take
4 the 4.54 for the contract power and energy and you add
5 the net cost of transmission at 1.06, then your LUEC
6 for the Manitoba Purchase is 5.6.

7 A. If you eliminate those, yes.

8 Q. Yes. At 80 per cent capacity factor.

9 A. That is correct.

10 Q. Now, let's just talk about the other
11 ingredients. First of all, we have this idea that you
12 can credit against the LUEC or against Manitoba as you
13 do both here and on that chart D-1, the cost of
14 cancellation. That's what you are doing, right?

15 A. Yes, and I believe this was discussed
16 by Panel 7.

17 Q. Yes.

18 A. Again, in the same way.

19 Q. Yes. And the higher the cancellation
20 charge that Ontario Hydro negotiated, the more cost
21 effective, then, it would make this alternative; right?

22 A. Apparently so. Apparently so.

23 Q. And, in fact, if you had made the
24 cancellation charge equal to the contract power and
25 energy, then you would have a zero LUEC for this

1 option.

2 A. Yes, but I think that avoids the real
3 and practical reasons why there are cancellation
4 penalties.

5 Q. I guess the question, then, sir, is
6 whether that cancellation charge should be considered
7 as a cost of doing business to Hydro, such as this
8 hearing, and assumed by it so that all options can be
9 considered on an even playing field; that would be the
10 question, wouldn't it?

11 A. Well, you impose that question.

12 Q. Yes.

13 A. This is looking at the real situation
14 that we face today.

15 Q. The real situation is that you are
16 incurring a cancellation charge and if that charge is
17 properly one which Hydro should absorb if it has to so
18 that all options are considered on a level playing
19 field, then the result would be different?

20 A. If the cancellation charge was not
21 included in this analysis, the result would be
22 different. But it wouldn't represent the real
23 situation that we face.

24 Q. Well, that, I guess, is for
25 determination. Tell me, in respect to the Smoky Falls

1 cancellation payment, have you done the same with that?

2 A. In the no approvals case that Mr.
3 Dalziel talked about, then we did the same with that,
4 yes.

5 Q. As I read the documents you have
6 assumed that you are refunded by the Ontario
7 government.

8 A. Well, that's what I mean by we have
9 taken into account the real situation with the real
10 agreements that are in place and the real cash flows to
11 Ontario Hydro that would take place.

12 Q. No, but you have not provided for a
13 deduction in the same way that you have for Manitoba
14 for the obligation to pay \$252 million arising out of
15 the cancellation of the Smoky Falls contract if that
16 were to occur.

17 A. I see that is entirely --

18 THE CHAIRMAN: But doesn't that go the
19 other way around?

20 MR. SNELSON: It goes the other way
21 around, exactly.

22 MR. B. CAMPBELL: There is no obligation.
23 It's paid already. It's repaid.

24 MR. HEINTZMAN: It's repaid by the
25 Ontario government.

1 MR. SNELSON: That is correct.

2 MR. HEINTZMAN: So that there is an
3 out-of-pocket cost by Ontario Hydro or the Province of
4 Ontario of \$252 million.

5 THE CHAIRMAN: I don't quite follow
6 that. The money is being paid to Ontario Hydro, am I
7 not right?

8 MR. SNELSON: Yes, that is correct.

9 MR. HEINTZMAN: The money has been
10 paid --

11 THE CHAIRMAN: Has been paid by Ontario
12 Hydro and is subject to repayment if certain events
13 occur.

14 MR. HEINTZMAN: Yes. So what I'm
15 suggesting is --

16 THE CHAIRMAN: Isn't that exactly the
17 opposite? Here we have a contract in which nothing has
18 been paid. But if the contract is cancelled, Ontario
19 Hydro is obliged to pay something.

20 MR. HEINTZMAN: No. All right. Let's
21 look at it historically.

22 Q. What would have been the case, there
23 would have been a payment of \$252 million to Kimberley
24 Clark. That was sort of put in a bank, as I understand
25 it. The question was, does the money get paid or

1 doesn't it get paid?

2 MR. SNELSON: A. No, that doesn't seem
3 to me to be the situation.

4 Q. Well, sir, as I read your documents,
5 and particularly Exhibit 646, and we can turn to them
6 if we want to, the cost to Ontario of that \$252 million
7 has not been deducted, deducted from anything in
8 determining the no approvals case. And it may be a
9 different situation, as the Chairman points out,
10 because that amount has been paid and it will be
11 refunded to Ontario Hydro.

12 A. It's shown as a credit to Ontario
13 Hydro in the no approvals case because that is a cash
14 flow that we would expect to receive under that
15 circumstance.

16 Q. But it is an out of pocket cost to
17 the total system, to the total citizens of Ontario and
18 Ontario Hydro if it considers --

19 THE CHAIRMAN: How can you say that?
20 It's not an Ontario Hydro cost.

21 MR. HEINTZMAN: That's correct.

22 THE CHAIRMAN: It's not a cost that is
23 borne by the rate payers of Ontario Hydro. It is a
24 cost that is borne by the citizens of the Province of
25 Ontario that include those rate payers; but it is a

1 different thing.

2 MR. HEINTZMAN: All right.

3 Q. But you have not taken any deduction
4 because Ontario Hydro is being paid that amount of
5 money by the Ontario government.

6 MR. SNELSON: A. We have shown it as a
7 credit because that is the cash flow to Ontario Hydro,
8 just as if this contract were to be cancelled, we would
9 actually in this case have a cash flow out of Ontario
10 Hydro to Manitoba, which is the real situation that we
11 face with the obligations that we have.

12 Q. But if this Board considers that that
13 should be assumed and incurred by Ontario Hydro and the
14 option considered on a level playing field with all
15 other options, then we mathematically would deduct that
16 deduction.

17 A. The cancellation payment is shown as
18 a separate item, and people can use that in their
19 judgment as they see fit.

20 Q. Right. Now, the next one is the
21 interconnection benefit. And again, if the evidence is
22 and if it is possible to obtain that interconnection
23 benefit, irrespective of whether you sign a contract
24 for the 1,000 megawatts, then again, that is not a
25 proper deduction from the LUEC attributable solely to

1 the Manitoba Purchase, is it?

2 A. That is an interconnection benefit
3 which is obtained from the combination of the Manitoba
4 Purchase and the advancement of the transmission that
5 the Manitoba Purchase requires.

6 Q. But if we can have that Manitoba
7 interconnection without purchasing that power and
8 energy, and by upgrading the interconnection and
9 transmission, then that 52 cents is not an appropriate
10 deduction from the LUEC solely of the Manitoba
11 Purchase, is it?

12 A. Well, it's not shown as a deduction
13 solely from the cost of the Manitoba Purchase. It's
14 shown as a deduction from the cost of the Manitoba
15 Purchase and the net cost of transmission. And to get
16 that interconnection benefit, you would need a large
17 part of that net cost of transmission.

18 Q. We have heard that you don't need all
19 the transmission and what not if you are just going to
20 interconnect with Manitoba and take the benefit of a
21 Manitoba interchange. If that's possible, then the
22 total amount of 52 cents is not an appropriate
23 deduction for the purpose of this LUEC calculation, is
24 it?

25 A. I am having difficulty with how you

1 can get the interconnection benefit without having
2 upgraded transmission from the Manitoba border all the
3 way to somewhere in our east system.

4 Q. Doesn't the other system anticipate
5 upgrading that system to some extent by the year 2017
6 or 2014?

7 A. It does to some extent. But it only
8 anticipates upgrading from the Thunder Bay area to
9 Northeastern Ontario. I don't believe it anticipates
10 upgrading substantially west of Thunder Bay.

11 Q. Well, there may be some upgrade
12 requirement. I don't know that. We would have to go
13 back and look at the previous panel.

14 But to the extent that you can accomplish
15 and obtain the interconnection benefit with a
16 non-Manitoba Purchase situation, then that is not an
17 appropriate deduction from the Manitoba Purchase LUEC,
18 is it?

19 A. My understanding is that is an
20 appropriate difference between the two scenarios that
21 have been looked at, one with the Manitoba Purchase and
22 transmission all the way from the Winnipeg area through
23 northwestern Ontario to northeastern Ontario and
24 complete integration of that transmission through that
25 area versus another option where there is no upgrading

1 of the systems between Northwestern Ontario and
2 Manitoba. And the transmission improvements that take
3 place are later transmission improvements but entirely
4 within Ontario.

5 Q. Well, that may be. But can I ask the
6 question once more and if you can tell me why I'm
7 wrong, please do. If you can get the benefit of the
8 Manitoba interchange without buying 1,000 megawatts
9 from Manitoba, can you accept that for the moment?

10 A. You can the benefit of the
11 interconnection benefit without buying 1,000 megawatts
12 from Manitoba if you make the appropriate additions to
13 transmission.

14 Q. So then you would apply the cost of
15 transmissions and the interconnection benefit, so much
16 of the transmission as you require, to the other
17 operation, right, without the Manitoba Purchase?

18 A. There is another way of obtaining
19 that benefit.

20 Q. Yes.

21 A. But there is an appropriate
22 difference between these two scenarios. There may be a
23 third scenario that we haven't looked at. But there is
24 an appropriate difference between these two scenarios.

25 Q. Are you agreeing with my statement,

1 that if you can have that benefit in a nuclear-based
2 system and not take the Manitoba energy and capacity,
3 then that interconnection benefit is something either
4 you give to the other system, the non-Manitoba Purchase
5 installation system, or you ignore here?

6 A. I am not clear whether, in fact, the
7 degree to which the other system would need upgrading
8 to get that interconnection benefit because that would
9 then become a cost to that alternative system. Whether
10 it be greater than the .52 or less than the .52, I
11 don't know.

12 Q. You didn't study that or analyze that
13 alternative?

14 A. I certainly have not done that, and
15 I'm not aware of such studies.

16 THE CHAIRMAN: I'm sorry, you lost me.
17 What does the .52 mean?

18 MR. SNELSON: .52 is the credit and the
19 80 per cent ACF for the interconnection benefit and the
20 LUEC calculation on page three of appendix C of this
21 document.

22 MR. HEINTZMAN: That's what we have been
23 talking about for the last few minutes or so, Mr.
24 Chairman.

25 THE CHAIRMAN: I'm looking at the wrong

1 table.

2 [4:12 p.m.]

3 MR. HEINTZMAN: The interconnection
4 benefit of 52 cents has been deducted from the LUEC
5 calculation of this purchase, and I have been asking
6 the witness whether you can get that benefit in any
7 event by strengthening your transmission system and,
8 therefore, it's not an appropriate deduction in
9 calculating the LUEC of the Manitoba Purchase.

10 DR. CONNELL: My recollection from Mr.
11 Huggins' and Dr. Macedo's evidence was - it's really
12 presented in appendix B - that indeed you can get that
13 benefit but it involves everything that is shown in the
14 interconnection, stage 1, stage 2, and then the Birch
15 to Marmian and the Marmian to Dryden reinforcement.

16 MR. HEINTZMAN: Right.

17 DR. CONNELL: But what's different there
18 is, I presume that's not available in full at least
19 until 2020, so there must be some difference in those
20 two plans with respect to the value because of the time
21 of availability, whether that amounts to the whole of
22 the 51 cents, I don't think, was clear from their
23 evidence.

24 MR. SNELSON: I would have to check with
25 Dr. Macedo but I would expect that those transmission

1 upgrades were very likely required, but there would
2 probably be something further from whatever's the
3 western most point has been strengthened to the
4 Manitoba border. And there's also the question as to
5 whether in fact Manitoba, without the purchase, would
6 strengthen their transmission from the Manitoba border
7 all the way through to Winnipeg.

8 MR. HEINTZMAN: Q. In any event, when we
9 turn back to table D-1 in appendix D, we have discussed
10 in each of the boxes on that page the credits that you
11 have allocated to the Manitoba Purchase.

12 In particular, if we just concentrate on
13 the 1992 Plan Update which is in the third box down, we
14 have discussed the cancellation credit of \$162 million,
15 we have discussed the interconnection benefit of \$221
16 million.

17 I want to now talk about this reduced
18 acid gas emissions, and you will see that under the
19 nuclear case you are giving credit to the Manitoba
20 Purchase for \$176 million in acid gas reductions; is
21 that right?

22 MR. SNELSON: A. That is correct.

23 Q. Yes. And it's really quite
24 interesting if you turn to the fossil case immediately
25 to the right -- and that \$176 million we will come to,

1 is what it's going to cost the Ontario system to reduce
2 acid gas emissions for that amount of capacity energy
3 that is now coming from the Manitoba because it doesn't
4 have any acid gas; right?

5 A. That is correct.

6 Q. If you look over on to the fossil
7 case the number is \$139 million?

8 A. Yes.

9 Q. So somebody has created a system here
10 into which the Manitoba system is injected for nuclear
11 that's going to cost \$176 million to reduce acid gas
12 emissions, but the system into which they have injected
13 it for the fossil is going to cost \$139 million.

14 A. That is the way the numbers have
15 worked out, yes.

16 Q. That's the way numbers have worked
17 out. And that's because of the way they hypothesize
18 the nuclear case into which they put the Manitoba
19 Purchase.

20 But you would have to devise a pretty
21 strange looking nuclear generation system that has \$37
22 million more in acid gas reductions; wouldn't you?

23 A. The results from the particular
24 choices that are made with respect to replacement
25 capacity, and although the column headings on nuclear

1 and fossil, which indicates that they are based on the
2 update nuclear and the update fossil managed surplus
3 cases, the replacement capacity in both cases for most
4 of the period is things other than nuclear capacity.

5 Q. I would guess so, yes. If you
6 replaced all of the Manitoba Purchase with nuclear
7 energy, then there would be no reason to give a credit
8 to the Manitoba Purchase for reducing acid gas
9 emissions; would there?

10 A. That is correct.

11 Q. So if we just compared this little
12 schedule here to a system where you put in nuclear,
13 whatever other nuclear you have got in there, you put
14 in nuclear to the extent of 1,000 or 1,200 megawatts,
15 which is what the Manitoba Purchase is, then you
16 shouldn't give the Manitoba Purchase this credit;
17 should you?

18 A. One would have to evaluate it against
19 that particular option, and if the result was that both
20 plans had the same amount of energy from fossil fuel
21 plant which would have the same degree of acid gas
22 emission controls required, then in that particular
23 evaluation there would not be anything under that item.

24 Q. Right. So if we assume such a plan
25 then we take out that \$176 million, we would have to

1 know what the value of the energy - you have got it at
2 1,722 - would you agree with me that a nuclear-based
3 program where all you did was take out 1,200 megawatts
4 of Manitoba and insert nuclear energy is not going to
5 have a value any greater than 1,722?

6 A. I can't say that with any assurance.

7 Q. Can you say with a degree of
8 likelihood that that is going to be the case?

9 A. It depends on what nuclear option is
10 chosen, I believe.

11 Q. Well, the nuclear option that you
12 have in your median case costs less than fossil in your
13 Update; doesn't it?

14 A. The nuclear option we have in our
15 update case is, I believe, four CANDU 6s on one site
16 and is based upon that, and I believe that does have a
17 slightly lower LUEC than a fossil option.

18 Q. So if you inserted that you would
19 have a number less than 1,722?

20 A. If it was feasible from scheduling
21 reasons, yes.

22 Q. Yes. And if you, in addition, take
23 out the 176, the economics of this Manitoba Purchase
24 versus that kind of system, you get a lot worse than
25 1.06; don't they, the bottom of the page?

1 A. Yes, provided that the option was
2 feasible from a scheduling point of view.

3 Q. Yes. These numbers are funny
4 numbers, the 1.06 comes from comparing the cost of this
5 capacity energy at 22.06 to the value of it at 2,076
6 and if you want to have something that's a good thing
7 you want the number to be less than one because then it
8 will have a positive value; right?

9 A. That is correct.

10 Q. So that even on this funny nuclear
11 system the number is more than one, it's 1.06, so even
12 in this configuration the cost is greater than the
13 value, therefore, comparatively it's not as good as the
14 funny looking nuclear system that you selected for
15 comparison on a cost basis?

16 A. There is a small cost advantage to
17 the system without the Manitoba Purchase, 6 per cent.

18 Q. Yes. Which - we can do the
19 mathematics - will get substantially greater when you
20 take out the \$176 million?

21 A. I think I have just done the
22 arithmetic.

23 Q. What is the number?

24 A. If I did it correctly, it's...

25 Q. The difference we can see COP/VOP

1 difference of 130 would be -- you would add 176 --

2 A. I believe it goes to 1.16.

3 Q. 1.16. Can you turn with me, sir, to
4 page 4 of the original of this document, the front part
5 of Exhibit 442.7.

6 See if I understand the nuclear case that
7 was constructed for comparison here.

8 A. I don't believe it's considered to be
9 a nuclear case, it's considered to be a comparison
10 against a plan with nuclear in it.

11 Q. Well, it says nuclear, the heading.

12 A. Yes, yes, but that is used to define
13 the plan that has nuclear and the following capacity
14 post-2009.

15 Q. In 2009?

16 A. Yes.

17 Q. Again in 2009. Let's look at the
18 bottom of page 4 to see the plan that was constructed
19 for the purpose of this exercise, and tell me if I'm
20 right.

21 "For the plan based on the nuclear
22 option, if the approvals for the Manitoba
23 purchase transmission --"

24 A. Excuse me, whereabouts are you
25 reading from?

1 Q. The very last paragraph of page 4 of
2 the evaluation which should be the first document.

3 A. Yes. I was on the wrong page.

4 Q. "For the plan based on the nuclear
5 option, if approvals for the Manitoba
6 Purchase transmission were to be denied a
7 mix of non-utility generation and demand
8 management is assumed to be advanced
9 initially, followed later by a mix of
10 combustion turbine units and nuclear
11 generation."

12 That's the nuclear plan.

13 A. That is the items that made up for
14 the Manitoba Purchase and the difference between the
15 cases with and without Manitoba Purchase in this
16 particular plan, yes.

17 Q. And the construction of those mixes
18 was dictated, I assume, because you didn't want nuclear
19 generation to start before 2009.

20 A. It assumed that nuclear was only
21 available in 2009, yes.

22 Q. And why wasn't a plan run showing
23 nuclear available before 2009?

24 A. For the same reasons that Mr. Shalaby
25 has discussed in terms of the upper load growth

1 scenario, that this is an illustration of what the
2 system would be like without the Manitoba Purchase, and
3 given that we are not seeking approvals now for
4 nuclear.

5 Q. So every time we have to run a
6 scenario we start the nuclear in 2009?

7 A. Well, the base case is the Update
8 Plan, so we are looking at how we would change the
9 Update Plan if the Manitoba Purchase were denied.

10 Q. Yes. But every time you construct an
11 alternative and you want to put nuclear in as an
12 alternative you start in 2009 or 2010?

13 A. This was a case of saying how would
14 the Update Plan change if the Manitoba Purchase were
15 denied, and it's compared to the update nuclear plan
16 and has all the constraints that are associated with
17 the update nuclear plan.

18 Q. Yes. And if we look above on page 4,
19 on that same page 4 of Exhibit 442.7, it says:

20 "The purchase is evaluated against
21 three alternative expansion plans from
22 the Update. One is the nuclear
23 option...", but this nuclear option is a
24 funny looking option because it's got demand management
25 and non-utility generation, or is it the same nuclear

1 option in the Update?

2 A. I'm sorry, I'm not with you at the
3 moment.

4 Q. Well, the paragraph says:
5 "Full simulation avoided cost...", and
6 then it goes into--

7 A. Yes.

8 Q. --purchases are valued against three
9 alternative expansion plans from the Demand/Supply Plan
10 Update.

11 A. Yes.

12 Q. One assumes the nuclear option is
13 developed in the post-2009 period.

14 A. Yes.

15 Q. Now, the nuclear option that we have
16 been looking at has things like non-utility generation,
17 demand management and combustion turbine units. Is
18 that in the same mixture as in the Update, or a
19 different mixture?

20 A. It's consistent with the Update.

21 Q. Is it the same?

22 A. Essentially it is the choosing not to
23 manage some of the surplus in the 2000 to 2006 or 7
24 time period.

25 Q. So it's the unmanaged nuclear; is it?

1 A. No, the base case is the managed
2 surplus nuclear case for this discussion from the Plan
3 Update Exhibit 452, and in the managed surplus case
4 then certain demand management and non-utility
5 generation options are deferred as part of the
6 illustrative surplus management.

7 If the Manitoba Purchase were cancelled
8 for whatever reason, then the surplus would be less and
9 there would be need for less surplus management in
10 around that period, and so this case has assumed that
11 some of those things that would have been deferred in
12 the managed surplus case are no longer deferred, so
13 they effectively replace part of the Manitoba Purchase
14 certainly in the period prior to 2009, beyond 2009 it's
15 different.

16 Q. Okay. Well, I'll come back to try to
17 figure out -- so it's not the nuclear case in the
18 Update, that's what you are telling me, the nuclear
19 managed case, the nuclear case here is not that one
20 because it doesn't have the Manitoba Purchase and,
21 therefore, you have brought forward NUGs and other
22 things?

23 A. No, the Manitoba Purchase is in the
24 nuclear update case, managed surplus nuclear update
25 case in Exhibit 452.

1 We have created another plan which is
2 very similar to that and the differences are being
3 described at the bottom of page 4, and the differences
4 are that the Manitoba Purchase is no longer in that
5 plan, there is less need to defer demand management and
6 non-utility generation in the early 2000s and so that
7 is brought back into the plan, which is as described
8 here, and then eventually you have to replace with more
9 major supply, and the evaluation is based upon the
10 difference between those two plans.

11 Q. Well, going back to page 4, the
12 second assumes a fossil option based upon IGC options 4
13 times 700 megawatt units? Do you see that?

14 A. Yes.

15 Q. Is that a plan that I find somewhere
16 in the Update, either in the managed fossil case or in
17 the no approvals case or somewhere?

18 A. That is the managed surplus fossil
19 case of the update as the base and it is similarly to
20 what I described for the nuclear, a plan is developed
21 without the Manitoba Purchase which is otherwise
22 similar to that case.

23 Q. What you have done there is you have
24 assumed new fossil generation based on IGCC to replace
25 the Manitoba Purchase, not demand management, not

1 non-utility generation; right?

2 A. If you go to the top of page 5 of
3 this document, just over the page it says:

4 "A similar mix of resources would be
5 advanced for the plan based on the fossil
6 option. Except for this plan, fossil
7 would be advanced in place of the nuclear
8 option."

9 So in the 2000 to 2009 period, the two
10 plans are identical.

11 Q. Can I look anywhere to find these are
12 or are they just the non-approval cases that we will be
13 coming to? Are these alternatives that you have run
14 that give us table D-1 set out anywhere?

15 A. I don't believe they are.

16 Q. If we just look at table D-1, sir,
17 without what I will call the bells and whistles, and
18 look only at the capacity and energy and transmission,
19 and we look under the nuclear case, even constructed as
20 it is, if I add the cost elements of 1,917 for capacity
21 and energy and transmission of 451, I get 2,368 for the
22 cost.

23 A. Yes.

24 Q. And if I add the value of the
25 capacity energy, take off the transmission loss of 43,

1 I get a figure of 1,679.

2 A. Yes.

3 Q. So in terms of looking at it without
4 the bells and whistles, that's a difference of how much
5 in terms of millions of dollars in the cost to the plan
6 versus the value of the plan. Instead of the number of
7 130 at the bottom of the page, what does the number
8 become?

9 A. The arithmetic, I believe, gives you
10 689.

11 Q. So it's almost \$700 million.

12 A. As I say --

13 Q. Sorry.

14 A. As I said, 689.

15 Q. 689. And the COP to VOP ratio know
16 is what. Am I correct that it's 1.45?

17 A. I get 1.41 and I have done it twice.

18 Q. All right, 1.41. So the one is 41
19 per cent more cost effective on that analysis than the
20 other?

21 [4:33 p.m.]

22 A. If you omit part of the cost and if
23 you omit a large part of the benefits, yes, you will
24 get a different number.

25 Q. I want to just, on an allied note,

1 take you to Exhibit 646 for a moment, if you would.

2 Page D-2 and 3. And this has to deal with the
3 hydraulic plan. And does this page on D2-3 show us the
4 lower load growth case?

5 MR. DALZIEL: A. Yes, it does.

6 Q. And does it show the hydraulic
7 installations that you want under that case, approval
8 of?

9 A. It's an illustration of how the
10 hydraulic facilities may be installed under this load
11 growth.

12 Q. And where do they show up?

13 A. On page 2-3?

14 Q. Yes.

15 A. On the left-hand column, if you come
16 down until you find Uncommitted Hydraulic.

17 Q. And in what years are they being
18 shown as being installed?

19 A. The values in '94 and '95 correspond
20 to Lake Gibson and Big Chute. Then out around 2007,
21 2011, 12, 13, and 14.

22 Q. So you are asking approval for the
23 Board with respect to hydraulic installations that may
24 occur in 2011, 2012, 2013, 2014.

25 A. We are asking for approval of a range

1 of megawatts associated with the hydraulic option.

2 Q. That may be installed in those years.

3 A. Under lower load growth, they may be
4 installed at later dates.

5 Q. Mr. Snelson, I would just like to
6 refer you to a study that you did on the various energy
7 needs of Ontario in 1985. You have got that document
8 do you, entitled: Working Paper, Meeting Future Energy
9 Needs, an Initial Review of the Options, Report 651 SP,
10 November, 1985?

11 MR. SNELSON: A. Yes, I do. This is
12 already an exhibit in the hearing, by the way.

13 Q. Oh, it is. Can you tell me what
14 exhibit it is? We couldn't find it. We don't need to
15 mark it again.

16 MR. SHALABY: A. Fifty-six. Exhibit 56.

17 Q. Okay. Let's call it 56 instead of a
18 new number.

19 And in this document you analyzed the
20 possible Manitoba purchase at that time.

21 A. Perhaps you could refresh my memory
22 as to where in this document that discussion is because
23 I think I'm getting --

24 Q. Yes, I will.

25 A. The discussion, apparently, starts on

1 page 40.

2 Q. Exactly. And if we go down about two
3 thirds of the way down, page 40, we see the words,

4 "Since Ontario Hydro's system cannot
5 presently accommodate a large import of
6 electricity from either of our
7 neighbouring provinces, we would have to
8 make extensive additions to our
9 interconnection lines and internal
10 transmission. These developments will be
11 expensive for both the selling province
12 and Ontario Hydro. A large purchase from
13 Manitoba, for example, will require the
14 construction of a new hydraulic plant on
15 the Nelson River. From there the power
16 generated will be transmitted via
17 Winnipeg to Thunder Bay by new
18 transmission lines to receive the power
19 and assure the stability of Ontario's
20 system. We will have to strengthen our
21 transmission lines from Thunder Bay to
22 Sudbury.

23 So we are talking about the same kind of issue.

24 A. Yes.

25 Q. And your understanding of the cost of

1 the purchase at that time is set forth on table 9.1.

2 And if I'm looking correctly or understanding
3 correctly, it's 4.5 cents per kilowatt; or as you have
4 expressed it, \$45 per megawatt per year.

5 A. Well, that is a --

6 Q. Maybe they don't work out the same.

7 A. That is \$45 a megawatt hour.

8 Q. Right.

9 A. Right?

10 Q. Do you know what that translates to?

11 A. That's 4-1/2 cents a kilowatt hour.

12 But the heading of the column is standard costs, not
13 levelized unit energy cost.

14 Q. Yes.

15 A. And on page 42, the third full
16 paragraph says, the second price factor concerns
17 Ontario Hydro. For us to be interested in a purchase,
18 the price must be less than the cost of any similar
19 alternative option that is available. Is that still
20 correct?

21 A. Clearly we are in the situation of
22 accepting a purchase at a slightly higher cost than
23 some of the things that we could do. So that is no
24 longer correct.

25 Q. It was correct in 1985.

1 A. This document was written to carry a
2 general sense. So it was approximately correct. I
3 don't think you necessarily interpret it as saying it's
4 got to be less in every respect.

5 Q. It says a transmission will only
6 occur, then, if the price set is greater than the
7 seller's cost and less than the cost to Ontario Hydro
8 of any similar and available alternative.

9 A. This is a general description of the
10 sort of negotiating process that would be gone through.
11 This was prior to the negotiation and the discussions
12 of the Manitoba Purchase in detail.

13 Q. But you are proposing an alternative
14 or a purchase to this Board that does not satisfy the
15 criteria that you enunciated in 1985, is that correct?

16 A. Well, this document was intended as
17 an input to the discussion of options in the
18 demand/supply planning strategy. It was intended as a
19 document to stimulate public discussion. And that
20 public discussion took place following the publication
21 of this document through the demand/supply option
22 study, the public consultations, the Select Committee
23 hearings, and so on, that all went along with that.

24 And the result was that the demand/supply
25 planning strategy. So anything that is said in here

1 with respect to strategy has been supplemented by the
2 demand/supply planning strategy at the very least.
3 This was a discussion document that was intended to
4 stimulate discussion.

5 Q. Well, that may be so. But the fact
6 of the matter is that what you are proposing now
7 departs from the criteria that you established or
8 enunciated in 1985.

9 A. I have agreed that the Manitoba
10 Purchase is currently a little higher in cost than
11 theoretical other options that we could pursue.

12 Q. Page 43, you pose important questions
13 about the purchase option. And the second one is, what
14 long-term benefits will accrue to Ontario? And you say
15 the contracts under consideration run for a length of
16 15 to 30 years. In that period we will pay a standard
17 cost of about \$40 per megawatt.

18 A. Hour.

19 Q. Per megawatthour. This is slightly
20 less than the standard cost of new coal plant,
21 significantly more than the standard cost of new
22 nuclear plant and roughly equal to the standard cost of
23 some of the better new hydraulic plant that could be
24 built in Ontario.

25 All of the options can deliver similar

1 blocks at peak power; however, there is a significant
2 point on which the purchase option differs from the
3 rest. After the purchase contract has expired, the
4 benefits of the plant revert to the selling province.
5 And with a life span of 60 to 90 years, hydraulic plant
6 will continue to deliver power for many more years.
7 Ontario Hydro will retain the transmission facilities
8 built in this province; and although this is a valuable
9 acquisition, it is obviously not as valuable as a
10 generating station. Is that still true?

11 A. Directionally certainly is true.
12 Manitoba retains the generating plant at the end of the
13 contract period and we obviously retain ownership, in
14 this case, very substantial transmission in Ontario.

15 Q. So that principle is one that as
16 enunciated, then, that is being departed from in the
17 present circumstance.

18 A. I don't think it was enunciated. It
19 was a description of the circumstances and where
20 certain ownerships go at the end of the contract
21 period. It's factual statements.

22 Q. Let's turn to page 44. What impact
23 will a purchase have on the provincial economy? Good
24 for the selling province, not so good for Ontario,
25 although the standard cost of the purchase option is

1 roughly comparable to the standard cost of a hydraulic
2 plant built in Ontario, most of the money for a
3 purchase is spent outside the province and creates
4 economic activity in jobs in Manitoba or Quebec.
5 Figure 5.2 shows the lifetime employment percentage in
6 Ontario of four major options. Only 14 per cent of the
7 jobs created as a result of a purchase will go to
8 Ontarians. Is that correct?

9 A. I couldn't be sure that the
10 percentages are correct.

11 Q. Well, that's the principle you
12 enunciated. Now, let's have a look at figure 5.2
13 opposite page 25.

14 A. I was having difficulty finding the
15 figure after all this time.

16 Q. Page 24.

17 A. Yes.

18 Q. And that shows us in the graph terms
19 that 93 per cent of the lifetime employment of nuclear
20 generation is in Ontario and 14 per cent is in purchase
21 hydraulic.

22 A. Yes.

23 Q. So your point in 1985 was not so good
24 for Ontario.

25 A. There is less employment in Ontario.

1 And Dr. Tennyson may want to comment here with respect
2 to --

3 THE CHAIRMAN: So it won't be a
4 completely wasted day. [Laughter]

5 MR. HEINTZMAN: Please do.

6 MR. B. CAMPBELL: I don't know which tag
7 Mr. Snelson has in the bet of how long it takes before
8 Dr. Long and Dr. Tennyson open their mouths. But I
9 think he's excising undue influence in that.

10 MR. HEINTZMAN: Q. Well, you were the
11 only person who expressed some input or involvement in
12 the Manitoba Purchase, so I have been directing the
13 questions to you but I would be happy to have a change
14 of conversation to someone else.

15 MR. SNELSON: A. To answer your
16 question--

17 Q. Thank you.

18 A. --there is less economic activity
19 building a hydraulic plant in Manitoba than there is
20 building one in Ontario.

21 Q. And the economic advantage to Ontario
22 of a nuclear option is some seven times in terms of
23 percentages that a purchase option is.

24 A. I'm not sure that those numbers
25 wouldn't be revised if they were redone today. They

1 are still going to be a lot greater. But whether those
2 specific numbers apply, I think one would have to
3 consider when they should be revised.

4 Q. I noticed, sir, that in 1985 you said
5 on page 10 at the top, a lot of this paper about need
6 for flexibility and the need to be ready to respond to
7 the high load forecast. And at the point top of page
8 10 you say, the answer is that we must plan for the
9 expected forecast while allowing ourselves the
10 flexibility to respond to the high and low forecast.
11 That was your view in 1985.

12 [4:48 p.m.]

13 A. Yes.

14 Q. Is it your view today?

15 A. Yes, I believe it is.

16 Q. And I just wanted to take you to your
17 discussion of the nuclear options that you were then
18 considering on page 29 in the summary revaluation.

19 You first of all discard the four times
20 1,250 megawatt nuclear option and then you also discard
21 in the next paragraph the 300 megawatt option and you
22 proceed with, as I understand it, in the last paragraph
23 the 600 megawatt Point Lepreau design, the 540 megawatt
24 Pickering design, the 850 megawatt Darlington design;
25 right?

1 A. Yes.

2 Q. And you go on and say:

3 "Although the 600 unit station is
4 the most expensive of the retained
5 option, it is the best single unit
6 station design."

7 Right?

8 A. Yes.

9 Q. So that the CANDU 6 is not something
10 that came to the attention of Ontario Hydro in
11 September and October, 1991?

12 A. That is correct.

13 Q. It's been something that you have
14 been considering and have full knowledge of and is one
15 of your preferred nuclear alternatives for seven years?

16 A. No.

17 Q. Well, isn't that what you are saying
18 here?

19 A. Well, your question included the
20 phrase full knowledge of and we have been studying it
21 for seven years.

22 We included it in this report here.

23 Actually very little work was done on it through the
24 demand/supply option study and preparation of
25 Demand/Supply Plan until it was picked up again in the

1 fall of last year. It's something we know of but it's
2 not something we have full knowledge of.

3 Q. Well, here on page 27, table 6.1, the
4 Point Lepreau CANDU 6, you refer to it, you are
5 knowledgeable about it?

6 A. We had some knowledge at that time.
7 I believe that we have much less knowledge about the
8 AECL designs generally than we have about the plant
9 that we built and operated ourselves.

10 Q. Well, I would gather that. But it's
11 one of the alternatives you have been studying for, or
12 had available for at least seven years?

13 A. It's been available for that period
14 of time certainly.

15 Q. Now, I want to then turn to your no
16 approvals documentation, and that's in Exhibit 646
17 starting at appendix E, and whoever is knowledgeable on
18 this I assume they will give Mr. Snelson a rest.

19 But, as I understand it, you ran no case
20 for a no approvals case where the only thing that was
21 not approved was the Manitoba Purchase; i.e., you
22 didn't run cases where you assumed that the hydraulic
23 was approved but the Manitoba Purchase was not
24 approved?

25 A. Those cases were effectively run as

1 part of the Manitoba evaluation that we have been
2 discussing for the last hour or so and I indicated that
3 in one of my answers.

4 Q. So that somewhere in the Manitoba
5 Purchase evaluation we would have runs which we don't
6 have available to us that have that scenario in them?

7 A. Effectively, yes.

8 Q. But any of the ones we do have
9 available to us here are no approvals for both fossil
10 and -- sorry, for both hydraulic and the Manitoba
11 Purchase?

12 MR. DALZIEL: A. That's right.

13 Q. And to the extent that the economics
14 of the hydraulic option are favourable, and would you
15 consider them reasonably favourable, Mr. Dalziel?

16 A. Their cost/benefit ratio show that
17 they are reasonably economic, yes.

18 Q. To the extent that you haven't
19 presented here in any event the no approvals case that
20 includes hydraulic as approved but has the Manitoba
21 Purchase as not approved, the economics of what you
22 presented is not as favourable as if you had the
23 hydraulic as approved; is that correct?

24 A. I'm going to have to ask you to
25 rephrase that.

1 Q. Well, to the extent that you have run
2 cases on the no approval basis, that has assumed
3 non-approval of a favourable economic element; i.e.,
4 the hydraulic.

5 What you presented here is not as
6 favourable as it would be if the hydraulics were
7 included as approved?

8 A. If the hydraulics were included, the
9 economics may turn out to be more favourable, that's
10 right.

11 MR. SNELSON: A. I wouldn't necessarily
12 assume that it would turn out to be more favourable,
13 because while the hydraulic cost/benefit ratios are
14 slightly below one, a lot of their benefits in most
15 beneficial years are outside of the period that is
16 captured in this analysis.

17 And so I couldn't be sure that the
18 hydraulic options were net beneficial within the period
19 that is evaluated up to 2017, recognizing that the
20 hydraulic options are evaluated on a 90-year life.

21 Q. But don't you try to capture at the
22 end of the period the remaining benefits of the option
23 as well; isn't that one of the exercises you go
24 through?

25 A. No. When the study period is less

1 than the life of the option, we allocate an appropriate
2 proportion of the cost of the option to the study
3 period.

4 Q. Well, I think I have got a sufficient
5 answer that it may be lower, and you are not so sure,
6 Mr. Snelson. Is that where I'm left?

7 A. I suspect that it wouldn't be lower,
8 but I couldn't be sure of that.

9 Q. Now, in these analyses, the no
10 approvals cases that I'm seeing here, I want to ask the
11 question - I think I have already got an answer to -
12 but you didn't run the cases that we looked at in the
13 Manitoba Purchase though, that funny nuclear plan where
14 you had extra DM and demand management and NUGs, that's
15 not one of these cases in appendix E; am I correct
16 there?

17 A. These are different cases.

18 Q. Yes. So let's look then to page
19 El-3. Is this your upper load case both nuclear and
20 fossil assuming no approvals, the chart that we see
21 there?

22 MR. DALZIEL: A. Yes, it is.

23 Q. Again, the first CANDU 6 we see comes
24 in in 2010.

25 A. Yes.

1 Q. And we have got IGCC and combined
2 cycle coming in in 2006 and 2007.

3 A. That's right.

4 Q. And you didn't run a case to show
5 CANDU 6 coming in, let's say, in 2006 or 2007?

6 A. Not that I'm aware of.

7 Q. And is there any reason that you
8 didn't do so?

9 A. Well, the same reasons that Mr.
10 Shalaby outlined earlier today.

11 Q. So in this case, out of 23,681
12 megawatts installed by 2017, we have got 6,000
13 approximately in CANDU, and over 18,000 or 17,000
14 megawatts in fossil generation; is that right?

15 A. Yes.

16 Q. And you will agree with me that's a
17 higher proportion of fossil in this plan than in any of
18 the DSP plans, the five that got near the finish line,
19 other than Plan 26, or case 26?

20 A. Other than Case 26, that is true.

21 Q. In paragraph 2.4 further up that page
22 it says:

23 The first base load station is
24 assumed to be an IGCC because of its
25 shorter lead time compared to nuclear.

1 That's the explanation that this document
2 gives as to why IGCC is in and not nuclear, not the
3 previous one, and you would not suggest, Mr. Dalziel,
4 that you couldn't have a nuclear plant on stream if the
5 Board gave authority in 1994 in 2006 and 2007; would
6 you?

7 A. The in-service date of the IGCC
8 facility here is based on the assumption that we are
9 starting in 1999, that's what gives us the 2009 for the
10 CANDU 6 and that's why we end up with 2007 for the
11 IGCC. So it's applying a consistent approach to this
12 case.

13 Q. So what happens between now and
14 2009 -- sorry, what happens between now and 1999?

15 A. In which, in this case?

16 Q. Yes. I see some generation being
17 installed in 1996.

18 A. That's right, and those are shown as
19 CTUs, possibly they could be non-utility generation.

20 Q. You said this plan assumes a starting
21 date in 1999?

22 A. For the base load major supply
23 options.

24 Q. Isn't the IGCC in part where we are
25 replacing the Manitoba Purchase which is a base load,

1 if there ever was base load.

2 A. I'm sorry, I don't follow your
3 question.

4 Q. Well, isn't this generation base load
5 generation to a considerable extent?

6 A. The IGCC facility?

7 Q. Yes?

8 A. Yes, it is.

9 Q. I'm sorry, then I didn't understand
10 your answer. The paragraph 2.4 says:

11 The first base load station is
12 assumed to be IGCC because of its shorter
13 lead time.

14 Now, I'm suggesting to you that it would
15 be perfectly feasible to have a nuclear generation
16 station available for 2006 and 2007.

17 A. Not the way we have put this case
18 indication together.

19 Q. And that's because you are in a state
20 of suspended animation on nuclear until 1999?

21 A. And on fossil. For both of them.

22 Q. Not on --

23 A. No, because we said for the IGCC
24 facility we didn't start anything on that until 2000 --
25 sorry, 1999 for the base load.

1 To use your words, the suspended
2 animation, it implies equally to the IGCC facility as
3 it does to the CANDU.

4 Q. So nothing happens between now and
5 1999 in terms of base load; is that it, we just sort
6 of --

7 A. In terms of base load, the way these
8 plans were put together, that's correct.

9 Q. So we just wait and don't do anything
10 on the base load until 1999; is that the way these were
11 all constructed?

12 A. That's the way these were
13 constructed.

14 MR. HEINTZMAN: May we adjourn there for
15 today, Mr. Chairman.

16 THE CHAIRMAN: Yes. How long --

17 MR. HEINTZMAN: I'm almost finished.

18 THE CHAIRMAN: You are almost finished.

19 And Mr. Hamer is going to follow you?

20 MR. HEINTZMAN: Yes.

21 THE CHAIRMAN: And how long is Mr. Hamer
22 going to be?

23 MR. HAMER: I would hope to be done by
24 lunch, Mr. Chairman.

25 THE CHAIRMAN: Thank you. Adjourn until

1 tomorrow morning at ten o'clock.

2 MR. B. CAMPBELL: Mr. Chairman, is there
3 any determination as to who follows AECL. I know there
4 was some discussion. Has that been resolved?

5 MR. MONDROW: Mr. Chairman, I think it's
6 IPPSO following AECL and we will be ready to go
7 tomorrow.

8 THE CHAIRMAN: Thank you, Mr. Mondrow.

9 THE REGISTRAR: Please come to order.
10 This hearing is adjourned until ten o'clock tomorrow
11 morning.

12 ---Whereupon the hearing was adjourned at 5:04 p.m., to
13 be reconvened on Tuesday, June 2nd, 1992, commencing
14 at 10:00 a.m.



E R R A T A
and
C H A N G E S

To: Volume 134

Date: Wednesday, April 15th, 1992.

<u>Page No.</u>	<u>Line No.</u>	<u>Discrepancy</u>
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Exhibit No. 520.100:

Interrogatory No. 9.2.12.

(Exhibit omitted, please include)

